SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
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CONCEPT AND PHILOSOPHY OF GRAPHICS AND PRODUCTION	

STRUCTURE

1.0 LEARNING OBJECTIVES

After going through this lesson, you will be able to:

- **Define theConcept of Graphic Communication.**
- **Acquaint about Print Production aspects.**
- **Determine the concept of Conventional Printing Technologies.**
- **Identify different printing like Relief Printing, Offset Printing, Gravure Printing, Screen Printing, Non-Impact Printing, Inkjet Printing, Electrophotography Printing and Thermography Printing.**

1.1 INTRODUCTION

Graphics and art means different things to different people. In Indian philosophy, art is satyam, shivamand sundaram. Satyam truth, shivam is that which does good to all and sunderam is beauty. Art touches us every day and everywhere-at home, at school and on the street. Art is both the process and the product of man's creativity, it is an experience. All of these concept can be expressed in a single statement: Science is rational objective analysis; art is emotional subjective synthesis.

A graphic is an image or visual representation of an object. Therefore, computer graphics are simply images displayed on a computer screen. Graphics are often contrasted with text, which is comprised of characters, such as numbers and letters, rather than images.

The term 'Graphics' derived from (from Greek word graphikos, "belonging to drawing") are visual images or designs on some surface, such as a wall, canvas, screen, paper, or stone to inform, illustrate, or entertain. In contemporary usage, it includes a pictorial representation of data, as in c manufacture, in typesetting and the graphic arts, and in educational and recreational software. Images that are generated by a computer are called computer graphics. Examples are photographs, drawings, line art, graphs, diagrams, typography, numbers, symbols, geometric designs, maps, engineering drawings, or other images. Graphics often combine text, illustration, and color. Graphic design may consist of the deliberate selection, creation, or arrangement of typography alone, as in a brochure, flyer, poster, web site, or book without any other element. Graphics can be functional or artistic.

1.2 CONCEPT OF GRAPHICS

The earliest graphics known to anthropologists studying prehistoric periods are cave paintings and markings on boulders, bone, ivory, and antlers, which were created during the Upper Palaeolithic period from 40,000–10,000 B.C. or earlier. Many of these were found to record astronomical, seasonal, and chronological details. Some of the earliest graphics and drawings are known to the modern world, from almost 6,000 years ago, are that of engraved stone tablets and ceramic cylinder seals, marking the beginning of the historical periods and the keeping of records for accounting and inventory purposes. From 600–250 BC, the Greeks played a major role in geometry. They used graphics to represent their mathematical theories such as the Circle Theorem and the Pythagorean theorem. In art, "graphics" is often used to distinguish work in a monotone and made up of lines, as opposed to painting.

Line art consists of distinct straight and curved lines placed against a (usually plain) background, without gradations in shade (darkness) or hue (color) to represent two-dimensional or three-dimensional objects. Line art is usually monochromatic, although lines may be of different colors.

An illustration is a visual representation such as a drawing, painting, photograph or other work of art that stresses subject more than form. The aim of an illustration is to elucidate or decorate

a story, poem or piece of textual information (such as a newspaper article), traditionally by providing a visual representation of something described in the text. Illustrations can be used to display a wide range of subject matter and serve a variety of functions, such as:

- giving faces to characters in a story
- displaying a number of examples of an item described in an academic textbook (e.g. A Typology)
- visualizing step-wise sets of instructions in a technical manual
- communicating subtle thematic tone in a narrative
- linking brands to the ideas of human expression, individuality, and creativity
- making a reader laugh or smile
- for fun (to make laugh) funny

A graph or chart is an information graphic that represents tabular, numeric data. Charts are often used to make it easier to understand large quantities of data and the relationships between different parts of the data.

A diagram is a simplified and structured visual representation of concepts, ideas, constructions, relations, statistical data, etc., used to visualize and clarify the topic. A symbol, in its basic sense, is a representation of a concept or quantity; i.e., an idea, object, concept, quality, etc. A map is a two-dimensional, geometrically accurate representation of a three-dimensional space.

One difference between photography and other forms of graphics is that a photographer, in principle, just records a single moment in reality, with seemingly no interpretation.

An engineering drawing is a type of drawing and is technical in nature, used to fully and clearly define requirements for engineered items. It is usually created in accordance with standardized conventions for layout, nomenclature, interpretation, appearance (such as typefaces and line styles), size, etc.

Computer graphics can be either two or three-dimensional. 2D graphics come in two flavors - raster and vector. Raster graphics are the most common and are used for digital photos, Web graphics, icons, and other types of images. They are composed of a simple grid of pixels, which can each be a different color. Vector graphics, on the other hand are made up of paths, which may be lines, shapes, letters, or other scalable objects. They are often used for creating logos, signs, and other types of drawings. Unlike raster graphics, vector graphics can be scaled to a larger size without losing quality. 3D graphics started to become popular in the 1990s, along

with 3D rendering software such as CAD and 3D animation programs. By the year 2000, many video games had begun incorporating 3D graphics, since computers had enough processing power to support them. Now most computers now come with a 3D video card that handles all the 3D processing. This allows even basic home systems to support advanced 3D games and applications.

In the 1990s, Internet speeds increased, and Internet browsers capable of viewing images were released, the first being Mosaic. Websites began to use the GIF format to display small graphics, such as banners, advertisements, and navigation buttons, on web pages. Modern web browsers can now display JPEG, PNG and increasingly, SVG images in addition to GIFs on web pages.

1.2.1 APPLICATION OF GRAPHICS

Graphics are visual elements often used to point readers and viewers to particular information. They are also used to supplement text in an effort to aid readers in their understanding of a particular concept or make the concept clearer or interesting. Magazines usually contain graphic material in abundance to attract readers. In computing, they are used to create a graphical interface for the user; and graphics are one of the five key elements of multimedia technology. Graphics are among the primary ways of advertising the sale of goods or services.

i. **Business:** Graphics are commonly used in business and economics to create financial charts and tables. The term Business Graphics came into use in the late 1970s, when personal computers became capable of drawing graphs and charts instead of using a tabular format. Business Graphics can be used to highlight changes over a period of time.

ii. **Advertising:** Advertising is one of the most profitable uses of graphics; artists often do advertising work or take advertising potential into account when creating art, to increase the chances of selling the artwork. Most importantly, graphics give a good look to artwork whenever it is applied. Any graphical work (especially advertisement) or any work of art for an advertisement to persuade and convince readers or viewers, it must be well designed with needed graphical tools so as to bring profit to the designer or advertiser.

iii. **Political:** The use of graphics for overtly political purposes—cartoons, graffiti, poster art, flag design, etc.—is a centuries-old practice which thrives today in every part of the

world.

iv. **Education:** Graphics are heavily used in textbooks, in order to illustrate theories and concepts, such as the human anatomy. Diagrams are also used to label photographs and pictures. Educational animation is an important emerging field of graphics. The Oxford Illustrated Dictionary uses graphics and technical illustrations to make reading material more interesting and easier to understand. In order for a graphic to function effectively as an educational aid, the learner must be able to interpret it successfully.

v. **Film and animation:** Computer graphics are often used in the majority of new feature films. A printing type seems like a simple rectangular piece of a metal but technical point of view it has numerous parts designated by their particular technical names. These part of printing type play a vital role while composing. These parts are enlisted as below:

1.2.2 VISUAL ARTS

The meaning of art and graphics differs from person to person, depending upon once capabilities. However, we all respond to art and graphics emotionally. The art that reaches through our eyes is visual art. Itis also known as verbal form of communication and also language because visual expression is use to communicate or interpret the artist and graphic designer message. Visual art has broadly two types- Fine arts and applied art.

The visual arts are art forms such as painting, drawing, printmaking, sculpture, ceramics, photography, video, filmmaking, design, crafts, and architecture. Many artistic disciplines such as performing arts, conceptual art, textile arts also involve aspects of visual arts as well as arts of other types. Also included within the visual arts are the applied arts such as industrial design, graphic design, fashion design, interior design and decorative art.Current usage of the term "visual arts" includes fine art as well as the applied or decorative arts and crafts, but this was not always the case. Before the Arts and Crafts Movement in Britain and elsewhere at the turn of the 20thcentury, the term 'artist' had for some centuries often been restricted to a person working in the fine arts (such as painting, sculpture, or printmaking) and not the decorative arts, craft, or applied Visual arts media.

a. **Fine Art**: The term fine implies beauty, skill, elegance and perfection. Fine Art is basically concerned with aesthetic pleasure. It is purely a product of a designer or artist search for self-expression.

In European academic traditions, fine art is art developed primarily for aesthetics or

beauty, distinguishing it from decorative art or applied art, which also has to serve some practical function, such as pottery or most metalwork. It was also considered important that making the artwork did not involve dividing the work between different individuals with specialized skills, as might be necessary with a piece of furniture, for example. Even within the fine arts, there was a hierarchy of genres based on the amount of creative imagination required, with history painting placed higher than still life.

Historically, the five main fine arts were painting, sculpture, architecture, music, and poetry, with performing arts including theatre and dance. In practice, outside education the concept is typically only applied to the visual arts. The old master print and drawing were included as related forms to painting, just as prose forms of literature were to poetry. Today, the range of what would be considered fine arts (in so far as the term remains in use) commonly includes additional modern forms, such as film, photography, video production/editing, design, and conceptual art.

One definition of fine art is "a visual art considered to have been created primarily for aesthetic and intellectual purposes and judged for its beauty and meaningfulness, specifically, painting, sculpture, drawing, watercolour, graphics, and architecture. In that sense, there are conceptual differences between the fine arts and the decorative arts or applied arts (these two terms covering largely the same media). As far as the consumer of the art was concerned, the perception of aesthetic qualities required a refined judgment usually referred to as having good taste, which differentiated fine art from popular art and entertainment.The word "fine" does not so much denote the quality of the artwork in question, but the purity of the discipline according to traditional Western European canons. Except in the case of architecture, where a practical utility was accepted, this definition originally excluded the "useful" applied or decorative arts, and the products of what were regarded as crafts. In contemporary practice, these distinctions and restrictions have become essentially meaningless, as the concept or intention of the artist is given primacy, regardless of the means through which this is expressed.

b. Applied Arts: Applied Art is art for a purpose. Fabrics, Furniture etc. have gained a specific value which sets them apart from fine art. Applied art can be defined as a product of a designer or artist search for a visual solution to problems of Human's basic need such as food, clothing and shelter. Both functionality and aesthetics are measures of creativity in applied art.The **applied arts** are all the arts that apply design and decoration to everyday and essentially practical objects in order to make them aesthetically pleasing.

The term is used in distinction to the fine arts, which are those that produce objects with no practical use, whose only purpose is to be beautiful or stimulate the intellect in some way. In practice, the two often overlap. Applied arts largely overlaps with decorative arts, and the modern making of applied art is usually called design. Example of applied arts are:

- Industrial design – mass-produced objects.
- Architecture – also counted as a fine art.
- Ceramic art
- Automotive design
- Fashion design
- Calligraphy
- Interior design
- Graphic design

1.2.3 COMMUNICATION ART

Communication art is art with a message. It is a field that overlaps some are of fine and applied art. It is historically rooted in the fine art of drawing, painting and writing, it is an applied art in the sense that it has a very clear purpose communication. In the world today, thousands of messages are reaching us every day in the form of brands of toothpaste, soaps and other personal care product that reaches us as we get up in the morning. Now it is omnipresent, everywhere and at all times we see it and do we notice it. It should aesthetic and functional. It transcends the borders of fine and applied art. In order to be effective, apiece of communication art must:

- Stop the target audience
- Hold the target audience
- Send an absolutely unambiguous message: and
- If the main purpose is advertising, evoke an instinctively positive response-usually brand purchase.

Communication art can refer to:

I. Communication design – a broad scoped mixed discipline approach to design and information-development concerned with how media and presentations communicate with people. This may include audio with or without visual art

- Visual communication – communication through visual aid and the conveyance of ideas and information in forms that can be read or looked upon
- Visual arts – art forms that create works that are primarily visual in nature
- Sound design – the process of specifying, acquiring, manipulating or generating audio elements.

II. Communication Arts (magazine) – the largest international trade journal of visual communications

III. Mass communication

1.2.4 GRAPHIC ARTS AND PRODUCTION

A category of fine art, **graphic art** covers a broad range of visual artistic expression, typically two-dimensional, i.e. produced on a flat surface. The term usually refers to the arts that rely more on line or tone than on color, especially drawing and the various forms of engraving;it is sometimes understood to refer specifically to printmaking processes, such as line engraving, aquatint, drypoint, etching, mezzotint, monotype, lithography,and screen printing (silk-screen, serigraphy). Graphic art further includes calligraphy, photography, painting, typography, computer graphics, and bindery. It also encompasses drawn plans and layouts for interior and architectural designs.

Throughout history, technological inventions have shaped the development of graphic art. In 2500 BC, the Egyptians used graphic symbols to communicate their thoughts in a written form known as hieroglyphics. The Egyptians wrote and illustrated narratives on rolls of papyrus to share the stories and art with others.During the Middle Ages, scribes manually copied each individual page of manuscripts to maintain their sacred teachings. The scribes would leave marked sections of the page available for artists to insert drawings and decorations. Using art alongside the carefully lettered text enhanced the religious reading experience.

Johannes Gutenberg invented an improved movable type mechanical device known as the printing press in 1450, the first outside Asia. His printing press facilitated the mass-production of text and graphic art and eventually, replaced manual transcriptions altogether.Again during the Renaissance years, graphic art in the form of printing played a major role in the spread of classical learning in Europe. Within these manuscripts, book designers focused heavily on typeface.Due to the development of larger fonts during the Industrial Revolution, posters became a popular form of graphic art used to communicate

the latest information as well as to advertise the latest products and services.

The invention and popularity of film and television changed graphic art through the additional aspect of motion as advertising agencies attempted to use kinetics to their advantage.The next major change in graphic arts came when the personal computer was invented in the twentieth century. Powerful computer software enables artists to manipulate images in a much faster and simpler way than the skills of board artists prior to the 1990s. With quick calculations, computers easily recolor, scale, rotate, and rearrange images if the programs are known.

Graphic artists applying for positions in today's job market are expected to be familiar with computers and a variety of software programs to create the most appealing, up to date designs. Graphic art software includes applications such as:

- Adobe Dreamweaver – a tool that facilitates the creation of webpages and dynamic internet content
- Adobe Illustrator – a software application that allows artists to manipulate vector graphics
- Adobe InDesign – desktop publishing software used for layout and design manipulation
- Adobe Photoshop – a bitmap graphics software including powerful graphics editing tools that provide a large variety of editing functionality
- CorelDraw – similar to Adobe Illustrator, it is another vector graphic manipulation tool
- PhotoImpact – a digital photograph editor
- QuarkXPress – similar to Adobe InDesign, it is another computer publishing software tool
- Paint.net – photograph editing capabilities with many plugins to expand use
- GIMP – similar to paint.net and Photoshop
- Inkscape – similar to Illustrator

Beside computers and software, graphic artists are also expected to be creative with processing camera work, registration, crop marks, and masking.

Graphic is a subset of visual art. It is a medium that conveys a written message with related pictures that have been manipulated. Modern user has simplified the term graphic art into graphics. Today graphic art is not just confined to printing. We find pictures and letter

with a spoken message on TV and video. These are all graphics created by human. Earlier graphic tools are brush, pen etc. were used in, know today sophisticated equipment like computers is use to create a graphic. Graphic communication is a process of conveying messages by means of visual images which are usually on flat surface.

Components of graphic communication: Graphics may be defined as a part of visual communication that is manipulated to enhance the message. Graphic communication has three basic components

- Written messages
- Visual Images-Pictures, drawing, photographs etc.
- Layout

All three components are basically pictures. These three components have a distinctive identity and used independently or in combination. In some graphics, the layout or picture arrangement is capable of conveying the message effectively.

1.2.5 FUNCTIONS OF GRAPHIC COMMUNICATION

Graphics design is not a mere decoration of the written message.it is a conscious and meaningful effort to maximize the impact of the written message. It is through a graphic design that are written message acquires the power to stop and hold the target audience. A truly effective graphic communication is the combined result of both message content and message presentation. The main function of graphic design in contemporary communication is translating and condensing idea or problems in such a way that they pave a shortcut to understanding.

Making the Print work: Graphics may be of 2D, 3D moving to static form. Print communication graphics are static in nature. A good print communication has good planning at it backs. The planning is handled by creative peoples. It is then followed by execution. Design skills visual perception and knowledge of technology work to together to give shape to the graphic design. Finally the idea in the form the design is duplicated for mass communication by one of the various production methods available. The steps in print making production in graphic communication are planning, execution, and production.

i. **Planning:** At this stage, every good printed material has good planning behind it. In Planning, there are following stages to be followed by one-information collection, cost control and information processing.
ii. **Execution:** At this stage printed communication material is handled by the creative team

comprising the designer and copy writer. They work on the basis of the information provided by the planning team, their work is most creative as it is the structure on which print communication is based. In this step they executed two copies- verbal copy and visual copy.

iii. **Production:** The idea of a piece of printed material becomes a reality when it is finally reproducing for mass production. Every printing job require the sustained effort from the printer and the print buyer, with equal attention to a complex set of variable ranging from the budget to the time schedule, printing process, prepress task, paper stock, binding and finishing that may affect the final product. The production process may start with an evaluation of the whole job in terms of the tasks that can be performed in house and services needed from the other prepress service provider. In addition to knowledge regarding the printing process, it is important for designers and print buyers to possess good communication skills so that they can build a good relationship with printers they depend on to get their work done.

1.2.6 PRINT PRODUCTION

The various printing processes used for production.Every type of printing process offers its unique print characteristics. Depending upon the final requirements their selection is made. General working principle of various printing processes are explained as:

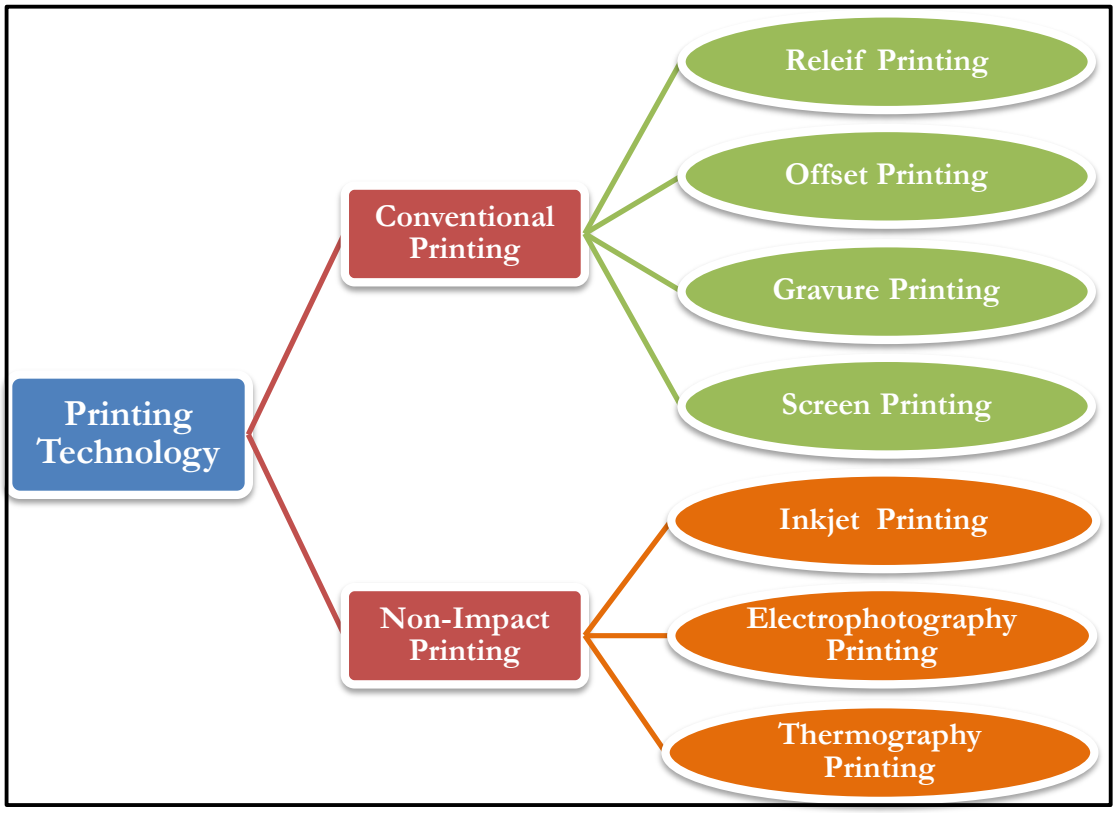


Figure: Printing Processes Overview

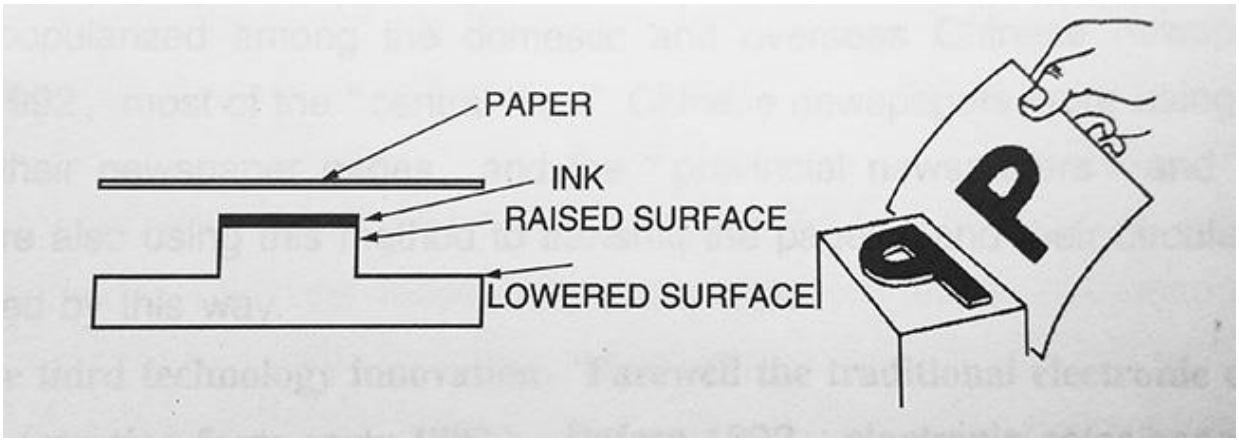
This delineated diagram explicates the broader overview of printing technologies i.e. Conventional Printing process (requiring a master) and Modern Printing process means non-impact technologies which are operated without a master.

A. CONVENTIONAL PRINTING TECHNOLOGIES: - Depending upon the type of printing principle, their nomenclature is made. These are as below:-

➢ **RELIEF PRINTING PROCESS:** - Letterpress printing as well as Flexography printing both are categorised as relief printing process. While on the other hand flexography process was first introduced in 1890 which consists of flexible image carrier. At that time was also known as aniline process of printing.

➢ **LETTERPRESS PRINTING**

In relief method of printing image and non- image areas are separated physically from each other. The image areas are raised and the non-image areas are at a lower level. This process (Letterpress) was invented by Johannes Guttenberg in 1440.



Letterpress Printing Principle

i. **Unique Features**
   - Sharp edge printing
   - Line and halftone block printing
   - Slightly embossed effect

ii. **Job Suitability:** Presently obsolete technology for printing industry. Only text and line work jobs in single colour and multi-colour with moderate registers and low print run are printed by small printers. Also suitable for cutting and creating and machine numbering jobs.

ADVANTAGES OF LETTERPRESS

- Versatility in regard to late corrections such as names, prices, changes of illustrations etc.
- Numbering machines can be used and printed perforations can be included in type formes
- Economic for short runs and overprinting
- Ideal for cutting and creasing, foil blocking and embossing on adapted presses
- Cheap and flexible method

DISADVANTAGES OF LETTERPRESS

- Printing done is not as good as that done by other processes.
- Straight lines and ruled work cannot be printed properly
- Gloss coated paper necessary for fine-screen halftones
- Relatively slow running speeds except screen

➢ FLEXOGRAPHY PRINTING

It has sameprinting principle. Flexography process was first introduced in 1890 which consists of flexible image carrier. At that time was also known as aniline process of printing.

i. **Unique Features**
   - Fine halftone effect
   - Tonal effect can be observed

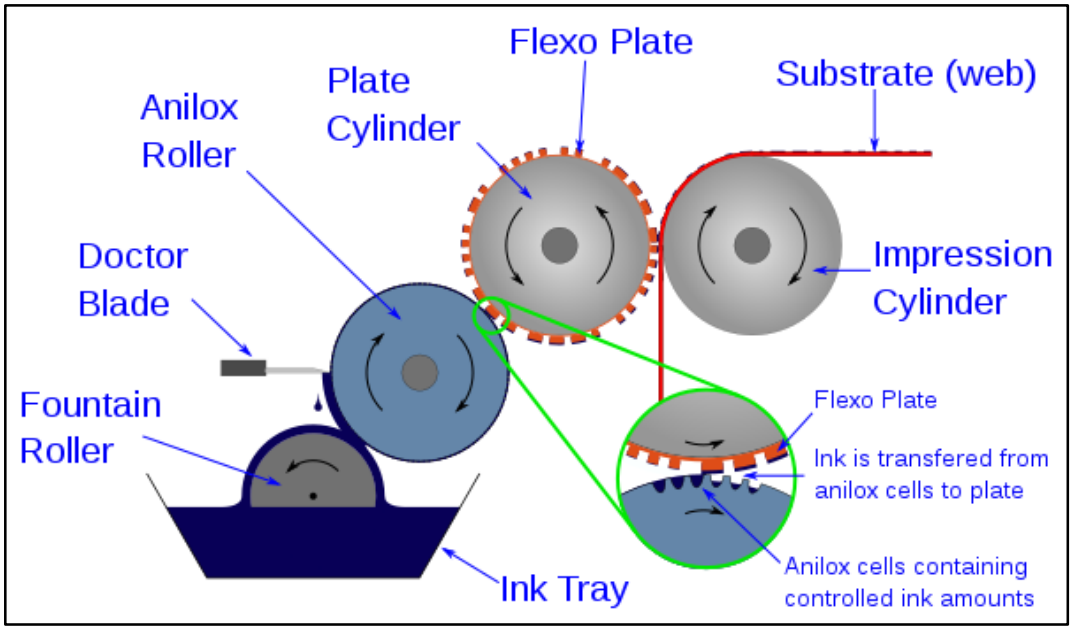
ii. **Job Suitability:** Flexography is widely being accepted for printing of packaging jobs on paper as well as non-paper substrates where a very high quality of printing is not desired.

ADVANTAGES

- Suitable for long run job and low wasting during make-ready
- Mostly used for packaging related jobs and on a variety of papers, it can also print on cellophane (used for food packaging)
- Used for a wide range of flexible substrates (paper, films and foils)
- It is well suited for both water-based and solvent-based inks.
- Ideally suited for printing reel/web fed substrates with in-line press finishing.
- An environmentally friendly process as it tends to use few chemicals
- Simple, generally easy to use process
- Ink and water balance does not have be achieved
- Press start up is quicker

DISADVANTAGES

- Cannot print screen halftones as fine as in gravure, offset,& letterpress
- Not economic for sheet-fed printing so therefore unsuitable for short-run general commercial printed products such as booklets, leaflets
- Although print quality has improved considerably in recent years, it is still not has high as offset lithography.
- Solvent based ink produce environmental pollution during drying



Flexography Printing Principle

➢ OFFSET PRINTING

It is a planography method of printing in which image and non- image areas lie on the same plane and separated from each other chemically. The lithography process was invented by AloisSenefelder in 1798 and offset process was invented by Ira Rubel in 1875.

i. **Unique Features**

- Smooth and even print
- Fine quality of line
- Halftone printing

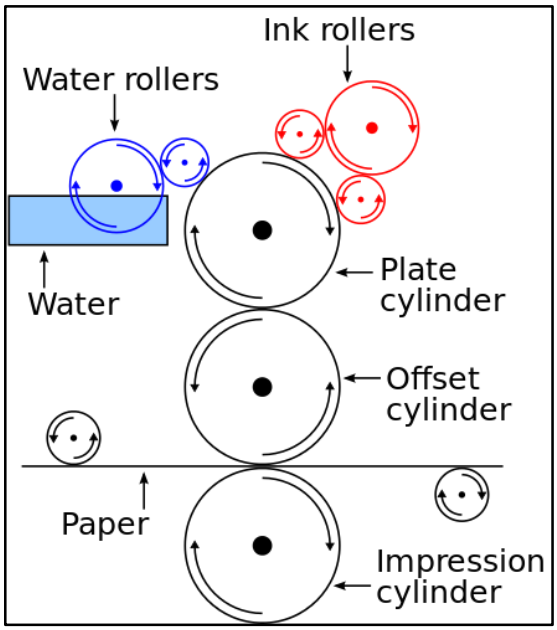
ii. **Job Suitability:** Mostly suitable from short to long run jobs for printing quality magazines, books, posters, diaries, packaging materials, newspaper and reprint jobs in single as well as multi-color.

ADVANTAGES

- Suitable for a very wide range of work, from short to long run
- Wide range of substrates able to be printed to a high standard
- Fine screen and high definition printed work even on relatively coarse substrates
- Wide range of printing plate materials available to suit different application
- High definition reproduction of type matter, line and tone illustrations
- Widest range of presses available of all the printing processes
- Machines speeds generally competitive across a wide of printing quantities
- Convenient to store films or plates for possible reprints.

DISADVANTAGES

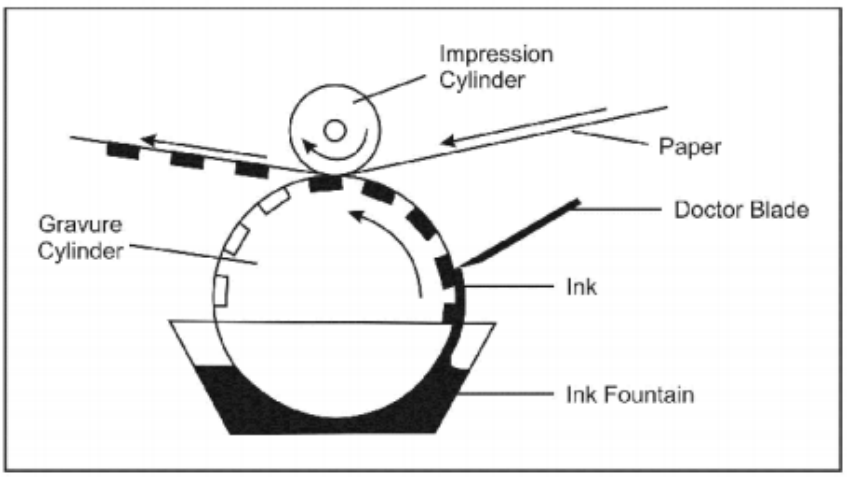
- Alterations to machine plates impracticable
- Care must be exercised in ensuring the printing quality maintained by adjusting and controlling the ink and water balance
- Being very much chemical based process, it is coming under increasingly greater environmental pressures to adopt 'greener' processing practices



Offset Printing Principle

➢ GRAVURE PRINTING

It is an intaglio method of printing in which image and non- image areas are separated from each other physically. The image areas are recessed (in the form of cavities) and the non-image areas are raised. The intaglio process was invented by Fox Talbot in 1806 and rotogravure process was invented by Karl Klic in 1878.



Gravure Printing Principle

i. **Unique Features**

- High print quality near continuous tone
- Highlight to Shadow detail

ii. **Job Suitability:** Gravure is suitable for extremely long-run commercial, packaging and security printing jobs like magazines, currency, postage stamps and bond certificates etc.

ADVANTAGES

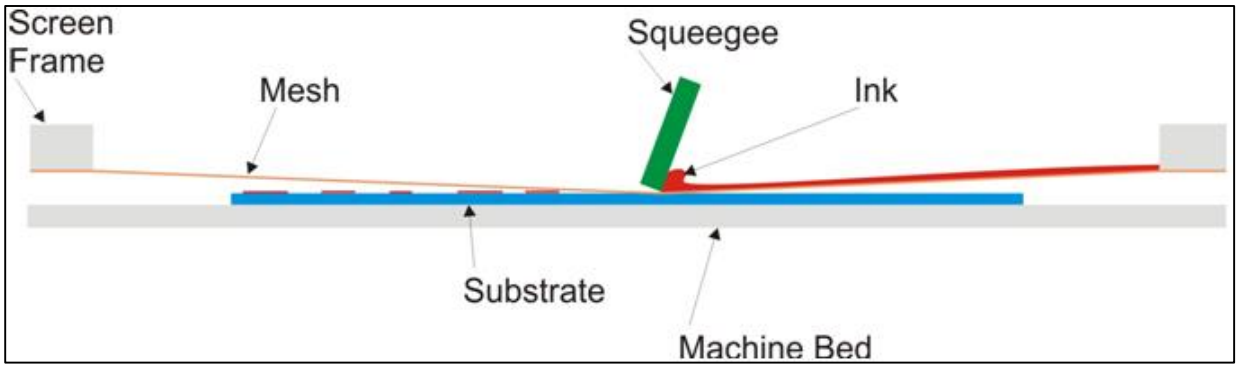
- Printing giving full colour values in reproduction, with rich tonal effects
- High speeds of great advantage in periodical, magazines, catalogues and colour supplement work, where very long runs are often required
- High quality printed results (higher dpi is used), nearer to continuous tone output
- Variable cylinder cut offs allow much more flexibility
- Highly suitable for long run jobs
- Highest quality of printing in terms of dpi or dpi can be obtained

DISADVANTAGES

- Printing cylinders are very expensive
- Alterations to plates or cylinders impracticable
- Type matter and fine line detail is broken up by overall cell structure
- Make-ready/set up costs expensive
- Unsuitable for short run jobs as expensive for them

➢ SCREEN PRINTING

It is a planography porous (stencil) method of printing in which image areas consists of open pores and the blocked pores work as non-printing areas. The silk screen printing was first practised in 1870.



Screen Printing Principle

i. **Unique Features**

More apparent ink density

Offers thick ink layer while printing

ii. **Job Suitability:**Suitable for printing on flat, curved and circular surfaces of any kind materials. Generally suitable for short run jobs e.g. visiting cards, letterheads, invitation cards, marriage cards and fancy items etc.

ADVANTAGES

Suitable for short runs in multi-color

Low preparatory costs, investment is low and easy to handle

Light colours can be printed satisfactorily on dark materials or deep colours

- Ideally suited for printing show cards, posters and unusual materials such as glass, plastic, heavy gauge metal etc.
- Provide very high gloss varnishing and raised printing results when required because of heaviest ink film thickness.

DISADVANTAGES

- Halftone subjects are limited to coarse screens
- Although automatic presses are now available, the process is still in the main restricted to short run work
- Long run jobs are expensive
- Creates drying problems due to thicker layer of ink film
- It consumes more ink

B. NON-IMPACT PRINTING TECHNOLOGIES:- These are those printing technologies which do not need any master. These are as below:-

➢ INKJET PRINTING

The ink jet process is a computer to print technology in which ink is sprayed from nozzles on to the paper, which means that no image carrier is required. Imaging is done directly onto the substrate. The data of the digital print job is transferred directly to control the imaging unit.

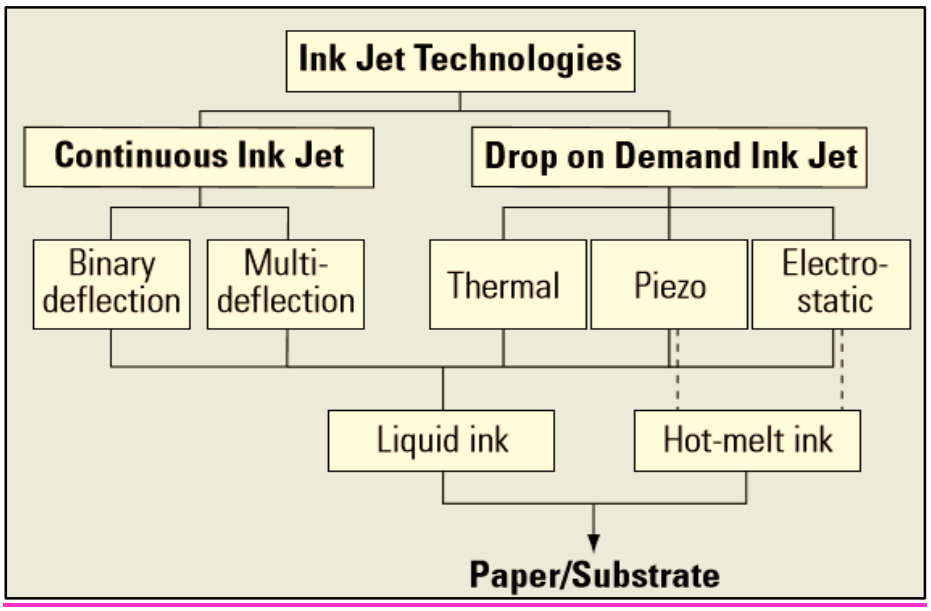


Figure: Overview of Inkjet Printing

➢ ELECTROPHOTOGRAPHY PRINTING

In addition to inkjet printing, the most common non-impact technology used for digital printing systems is electrophotography printing. Credit of its invention is crowned to Chester Carlson in 1939. Electrophotography is the most widespread non-impact printing technology. The principle of electrophotography is based on a complete cycle which gives am impression on to the substrate. For single print impression this complete cycle consists of the followings five steps:-

i. Imaging
ii. Inking
iii. Toner transfer i.e. Printing
iv. Toner fixing
v. Cleaning

➢ THERMOGRAPHY PRINTING

This NIP technology of thermography printing can be classified into different processes namely thermal transfer and thermal sublimation. In both of the processes, the ink is applied to a donor (either web or sheet) and then subsequently transferred to the substrate by the application of heat. Depending upon the nature of transfer thermography can be classified as :-

i. **Direct Thermography: -** In direct thermography printing, the substrate is treated with a special coating, which changes its color when it is subjected to heat. Such type of special paper is commonly used for applications of labelling and coding i.e. bar codes.

ii. **Transfer Thermography: -** In thermal transfer thermography printing, the ink is stored on a donor and is transferred to the substrate by the application of heat in contrast to direct thermography printing.

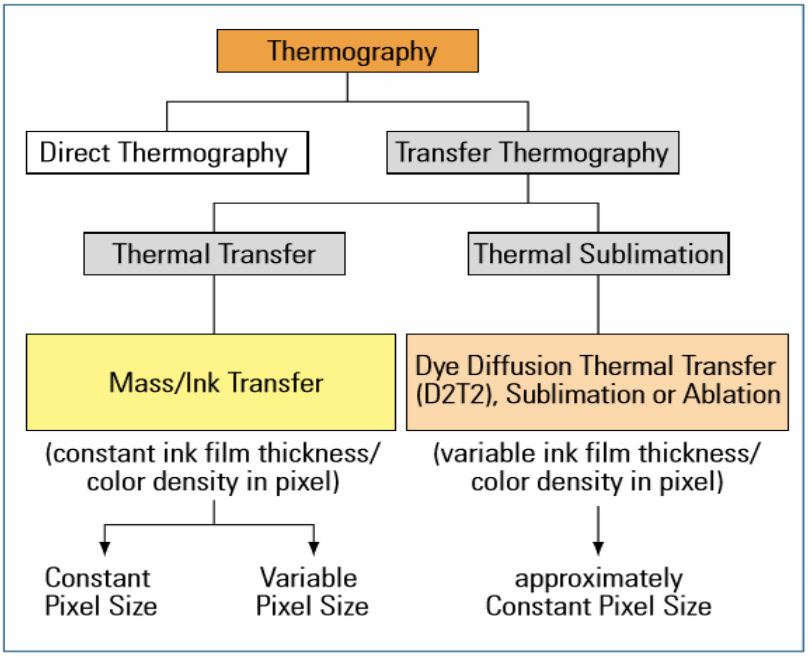


Figure: Overview of Thermography Printing

1.3 CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

CHOOSE THE RIGHT OPTION.

1. The art that reaches through our eyes is visual art. It is also known as verbal form of communication:
   a) Graphics
   b) Visual art
   c) Applied art
   d) All the above
2. Which term implies beauty, skill, elegance and perfection?Also basically concerned with aesthetic pleasure
   a) Decoration
   b) Graphics
   c) Fine Art
   d) Creativity

3. The arts that apply design and decoration to everyday and essentially practical objects in order to make them aesthetically pleasing
   a) Graphics
   b) Visual art
   c) Applied art
   d) All the above
4. When movable type mechanical devicewere invented by Johannes Gutenberg :
   a) In 1450
   b) In 1350
   c) In 1300
   d) In 1400
5. A tool that facilitates the creation of webpages and dynamic internet content
   a) Adobe Dreamweaver
   b) Adobe InDesign
   c) PhotoImpact
   d) QuarkXPress
6. Components of graphic communication includes:
   a) Written messages
   b) Visual Images-Pictures, drawing, photographs etc.
   c) Layout
   d) All the above
7. Which of the following printing are categorised as relief printing process:
   a) Letterpress printing
   b) Flexography printing
   c) Both ‘a’ and ‘b’
   d) None of the above
8. It is a planography method of printing in which image and non- image areas lie on the same plane and separated from each other chemically.
   a) Letterpress printing
   b) Flexography printing
   c) Screen printing
   d) Offset Printing
9. Those printing technologies which do not need any master are called:
   a) Non-impact Printing

b) Impact Printing

c) Relief Printing

d) Screen Printing

10. Credit of which invention is crowned to Chester Carlson in 1939:

a) Inkjet Printing

b) Electrophotography Printing

c) Thermography Printing

d) All the above

1.4 SUMMARY

- Graphics and art means different things to different people. In Indian philosophy, art is satyam, shivam and sundaram. Satyam truth, shivam is that which does good to all and sunderam is beauty.
- Graphics are visual elements often used to point readers and viewers to particular information. They are also used to supplement text in an effort to aid readers in their understanding of a particular concept or make the concept clearer or interesting.
- The art that reaches through our eyes is visual art. It is also known as verbal form of communication and also language because visual expression is use to communicate or interpret the artist and graphic designer message. Visual art has broadly two types- Fine arts and applied art.

1.5 KEYWORDS

Visual art: The art that reaches through our eyes is visual art. It is also known as verbal form of communication and also language because visual expression is use to communicate or interpret the artist and graphic designer message. Visual art has broadly two types- Fine arts and applied art.

Fine Art: The term fine implies beauty, skill, elegance and perfection. Fine Art is basically concerned with aesthetic pleasure. It is purely a product of a designer or artist search for self-expression. Historically, the five main fine arts were painting, sculpture, architecture, music, and poetry, with performing arts including theatre and dance.

Applied Art: The applied arts are all the arts that apply design and decoration to everyday and essentially practical objects in order to make them aesthetically pleasing.

Relief Printing Process: - Letterpress printing as well as Flexography printing both are categorised as relief printing process. In relief method of printing image and non- image areas

are separated physically from each other. The image areas are raised and the non-image areas are at a lower level.

Offset Printing: It is a planography method of printing in which image and non- image areas lie on the same plane and separated from each other chemically.

Gravure Printing: It is an intaglio method of printing in which image and non- image areas are separated from each other physically. The image areas are recessed (in the form of cavities) and the non-image areas are raised.

Inkjet Printing: The ink jet process is a computer to print technology in which ink is sprayed from nozzles on to the paper, which means that no image carrier is required. Imaging is done directly onto the substrate. The data of the digital print job is transferred directly to control the imaging unit.

Electrophotography Printing: - In addition to inkjet printing, the most common non-impact technology used for digital printing systems is electrophotography printing.

Thermography Printing: The NIP technology of thermography printing can be classified into different processes namely thermal transfer and thermal sublimation. In both of the processes, the ink is applied to a donor (either web or sheet) and then subsequently transferred to the substrate by the application of heat.

1.6 SELF-ASSESSMENT TEST

1. What do you mean by graphics?
2. Explain various applications of graphics
3. Define visual arts and fine arts.
4. Explain applied arts and its applications.
5. What do you mean by communication art?
6. Differentiate the term graphic, arts and production.
7. Explain various functions of graphic communication.
8. Delineate different print production aspects for graphics.
9. Explain principles of conventional printing technologies.
10. Define relief printing, offset printing, gravure printing and screen printing.
11. What is non-impact printing?
12. Define inkjet printing.
13. Explain electrophotography printing.
14. Explain thermography printing.

1.7 ANSWERS TO CHECK YOUR PROGRESS

1. b) Visual art
2. c) Fine Art
3. c) Applied art
4. a) In 1450
5. a) Adobe Dreamweaver
6. d) All the above
7. c) Both ‘a’ and ‘b’
8. d) Offset Printing
9. a) Non-impact Printing
10. b) Electrophotography Printing

1.8 REFERENCES / SUGGESTED READINGS

1. https://en.wikipedia.org/wiki/Graphics
2. https://techterms.com/definition/graphics
3. https://en.wikipedia.org/wiki/Graphic_arts
4. https://en.wikipedia.org/wiki/Applied_arts
5. https://en.wikipedia.org/wiki/Visual_arts
6. https://en.wikipedia.org/wiki/Communication_art
7. https://en.wikipedia.org/wiki/Fine_art
8. www.wikimedia.org
9. https://www.wikiwand.com
10. https://dgpressservices.com
11. Art and Production by NN Sarkar
12. https://www.dgpressservices.com

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: MR. VIKAS JANGRA
LESSON NO.: 2	VETTER: MR. AROHIT GOYAT
ELEMENTS AND PRINCIPLES OF DESIGN	

STRUCTURE

2.0 LEARNING OBJECTIVES

After reading this lesson, you will be able to…

- **Know about Graphics design.**
- **Understand Graphics design essentials.**
- **Know aboutfactors taken into consideration while developing any graphics design.**
- **Know aboutdifferent elements and Principles of design.**

2.1 INTRODUCTION

Design is a basically a plan for preparing an object, system. Designing is a process because it is an ongoing series of activity. The person who creates or produces design is called designer. The word Graphics is originated from the word graphikos, which means to draw. Therefore it is related with visual images, drawings. In this chapter we will learn about graphic design in detailed way. We will learn about what are various essential element of graphics design known as elements of design. These elements are arranged according to particular set of rule and

regulations called 'principles of design'.

2.2 GRAPHICS DESIGN

Graphic design is a creative process in which both art and technology are combined to communicate ideas. So in order to convey a message the designer works with a variety of communication tools including typography and image. Generally the following factors are taken into consideration while developing any graphics design:-

1. **Objectives of Graphic Design: -** The purpose of the design application is to provide accessible information about ideas, products and services, to create a bond between the consumer and the client. Always remember that graphic design is functional and it must meet the client's and audience needs. There are four goals you should keep in mind:
    a. Attract the reader
    b. Make your work easy to read
    c. Give your reader something to do
    d. Give the reader the desire and ability to do it.
2. **Target Audience: -** Graphic design is aimed at mass audience that may vary in size and demographics. Defining your audience will help you to understand whom you are designing for, while keeping their collective preferences, culture, taste, motives and income in mind.
3. **Destination: -**The communicator also needs to know what media or channels the target audience reads, views and trust. It could be radio, television, postcard, billboards, newspaper, newsletter, handbills, magazine and so on. Always use right words that understood by audience. Careful choice of words and arrangement of type and art on page and even the choice of paper are necessary.
4. **Financial Aspects: -**Your clients are the one paying the bills. They have the products that need promotion. You must stay within their budget. Get all information from client and find out what goals the clients wants to achieve with the project. Also one should have the knowledge of process, raw material cost, delivery system, manpower requirement etc.

2.2.1 DESIGN AND ITS ELEMENTS

Design is an idea created in one's mind. It is used by artists and graphic designers as language of vision to communicate. In order to develop any design, it requires creative approach which

combines all elements in an effective way. Numerous elements of design are delineated as below: -

1. **Point:** Point in design is an element which can be seen clearly either as a visual structure or as an action in a visual element. There are two types of point:-
   - Real Point is a position in space, which holds a strong attraction for the eye e.g. initial letter of a printed page.
   - Imaginary Point is one, which can be felt but not seen e.g. optical center of a blank space, the eye hits a spot known as the optical center of the space. This is an imaginary point slightly above the geometrical center of the space.

Finding Optical Center: If we divide the space horizontally into five parts and vertically into two parts, the optical center is the point located at the intersection of the vertical & horizontal division, which are two units from top and three units from the bottom of the space. In conventional cover designs, the main element (usually the title of the book) is placed at the optical center.

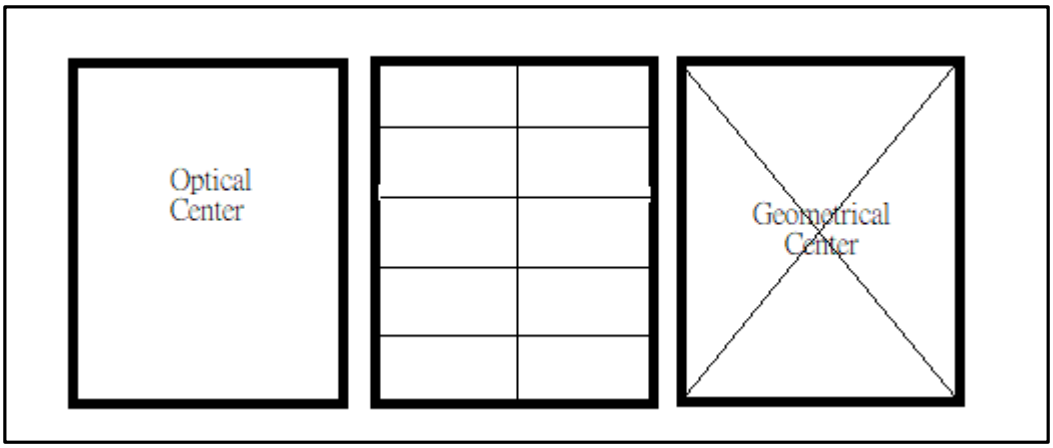


Figure 1: Optical Center (Imaginary Point) and Geometrical Center (Real Point)

2. **Line**: When we extend a point in any direction, we will obtain is a line. A line may be defined as the shortest distance between two points. Similar to point, a line may be real or imaginary.
   - Real or structural lines are visible in every element of design including space. The edges of the elements are nothing but lines. A group of letters can form a line.
   - An imaginary line can be felt when two or more elements are in alignment. Between the elements no line are visible but one can feel that one element is held to another by an imaginary line.

   Line can be straight or curved, heavy or light, smooth or rough, continuous or

broken, and real or imaginary. Each line creates a specific mood.

Different Lines and their indication in Graphics Design		
Sr. No.	Type of Line	Indication
1.	Horizontal Line	Speed, Feeling of calmness
2.	Vertical Line	Division, Strength
3.	Straight Line	Direction, Continuity
4.	Broken Line	Low Speed, Pause
5.	Rough Line	Casualness
6.	Curved Line	Movement of Water

3. **Shape:** An area enclosed by line, curve is usually perceived as shape. Basically there are three basic shapes; square, circle and triangle. Every shape plays a vital role and communicates while used in graphic designing. There are numerous variations and combinations of these shapes.

Sr. No.	Type	Shape	Description
1.	Square	□	Dull shape because of its uniform size. It denotes boredom. It represents constant value.
2.	Circle	O	Symbol of Universe Indicates peace, protection
3.	Triangle	Δ	Symbol of safety Represents the side of arrow, tension

Figure 2: Shape and their description in designing

Each shape carries a particular weight which cannot be measured by any instrument and can be felt emotionally known as its optical weight e.g. bigger, darker-toned and ragged-edged shapes carry more weight than smaller, light-toned and straight edge shapes. While planning a design, each shape is consider as an important element of design. The shape may be very distinct or vague. Shapes are proportional relationship in terms of size.

4. **Tone:** The relative lightness or darkness of a surface quality, which can be felt by our eyes is known as 'tone'. The degree of lightness and darkness of color help us to perceive an object in 3 dimensional forms even on a two-dimensional surface. These qualities of color are called values of color hue. Tones are of various degrees – shining to dull & smooth to rough.

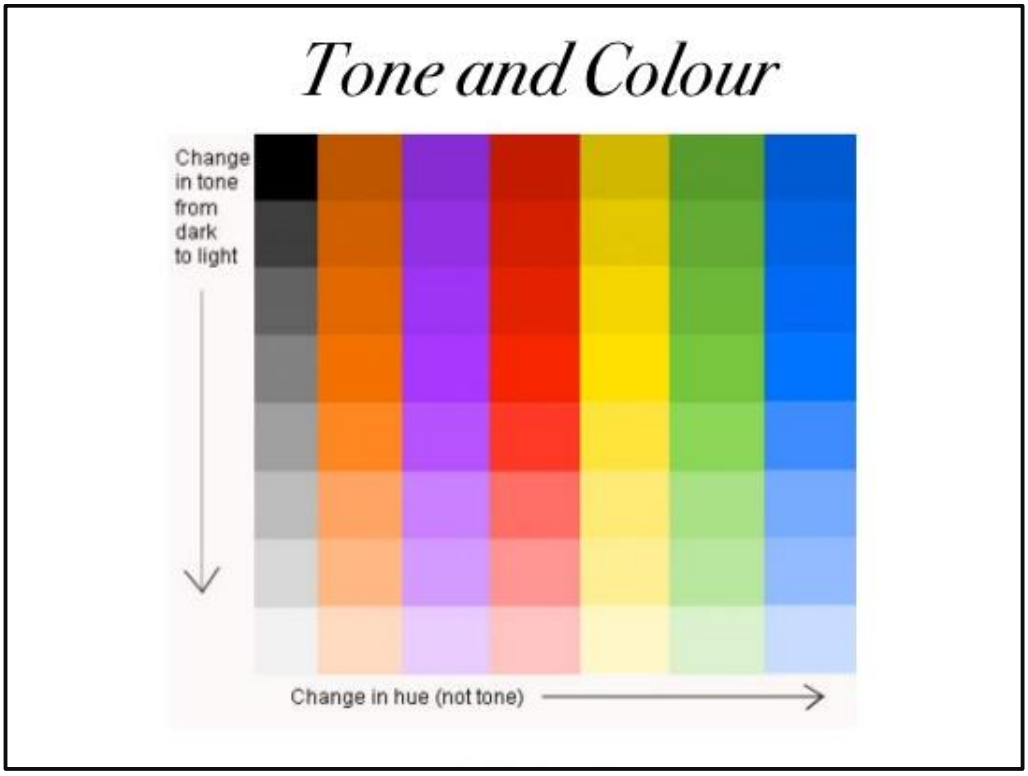


Figure 3: Tone and Color in designing

The tone is a composition created by a light typeface will look light in comparison with an equivalent-sized composition using a heavy type-face. The tone & texture influence the weight of the shape. A rough surface can be sensed visually as having texture. Texture can also vary from smooth to very rough and from hard to very smooth.

5. **Texture:** They are patterned pen or brush strokes. Texture is bringing out or rendering a tonal merging. It gives better communication to the reader. It creates interest also.

   There are two categories of texture-tactile and visual. Tactile texture are real we can feel their surface with our fingers. Visual textures are illusionary. Creating the impression of a texture with line, value and color is called visual texture.

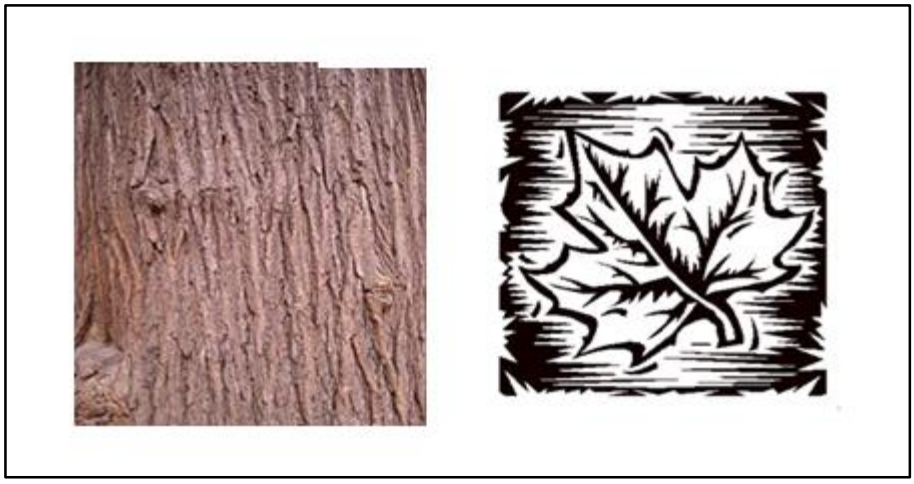


Figure 4: Texture

6. **Color:** Color is one of the powerful tools in communication. In design colors are used to convey certain emotion and to produce psychological effect. All color comes from sunlight reflection and absorption of light produces the effect we know as color. (E.g. A lemon is yellow because it absorbs all color and reflect yellow).
7. **Type:** It refers to which fonts are chosen, their size, alignment, color, and spacing. It is usually designed with visual elements so it should be synergistic. The fundamental principles that apply to all the visual arts also apply to typographic design.
8. **Space:** Space is used to give a pleasing effect to the printed product for example; we give margins around a printed sheet (Head, Tail, Spine and Fore edges) spacing also helps the reader, to read lines continuously (interline spacing and inter word spacing).

   Positive & Negative space: The shape or figure what you create on the page is called positive space and rest of the space on the page is called negative space. All spaces both positive and negative should be considered as active.

2.2.2 PRINCIPLES OF DESIGN

To express the ideas and create a visual composition Artists and Designers use design as a language. In order to create an effective design all the design elements should be placed according to some set of rules and regulations known as principles of design. These are explained as: -

i. **Proportion:** It is concerned with size relationships. Both the size of the sheet and the size and placement of the images on the sheet are important to proportion. It is the relationship between the size and the shape. It is a matter of relationship of height, width, depth and surrounding space i.e. all the elements of design are in proportion.

This is the most important aspect i.e. planning which is to be considered while designing, because the design starts with deciding and finalizing the shape in which all design elements will be arranged. This is crucial because the first thing the viewer will notice is the shape of the design. The most pleasing shape is a rectangle e.g. a house, a room, a book, a magazine etc. are in rectangular shape. The ideal shape was known as a **golden rectangle**. The ratio of breadth to length is 2:3. The most pleasing effect of space is a set of rectangles of different sizes. On the basis of proportion, the reader decides which one to read first and so on. Proportion develops a relationship of size and strength between one element and other elements or the design as a whole. On the other hand, a square have four even sides. It is monotonous and uninteresting because the eyes quickly perceived the quality of its dimensions. Therefore square is not considered as a good design element.

Figure: Planning for design i.e. Proportion

ii. **Balance:** Placement of design elements should put together not only in proportion but in balance also. The balance principle also acts as the principal of gravity. Balance is defined as, "a state of rest due to action of force that counteract each other".

Balance refers to equalizing the weight of elements in a design. It is a term that describes the equilibrium and visual weight of a graphic page. The visual weight of a design depends upon a no. of factors like image's size, color, text matter and density in relation to other elements on the page. Therefore proper balancing of elements become essential for a good and effective design. Balancing is of two types: formal and informal. There are three types of balance used in designing enlisted as:-

- Formal or Symmetrical Balance
- Informal or Asymmetrical Balance
- Radial Balance

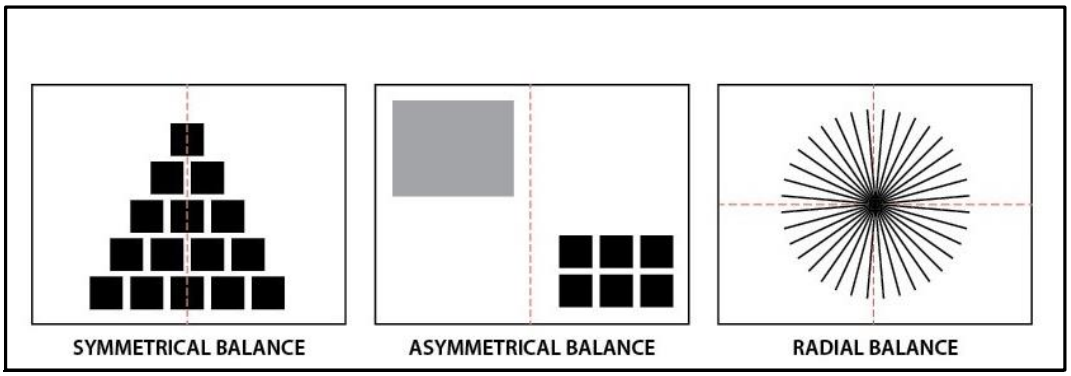


Figure: Types of Balance

These are explained in detail as below:-

a. **Formal or Symmetrical Balance:** It denotes that all elements are positioned symmetrically on a page. It places all elements in a precise relationship to one another. It gives us the feeling of formality, exactness, carefulness and stiffness. It is used for a target audience, which believes in formality and consider these designs dignified and reserved. Book covers, company reports covers, specialized booklets etc are often designed formally. This kind of balance has its place in design work in many situations, it is uninteresting and stiff. Symmetrical balance denotes an exact mirror image.

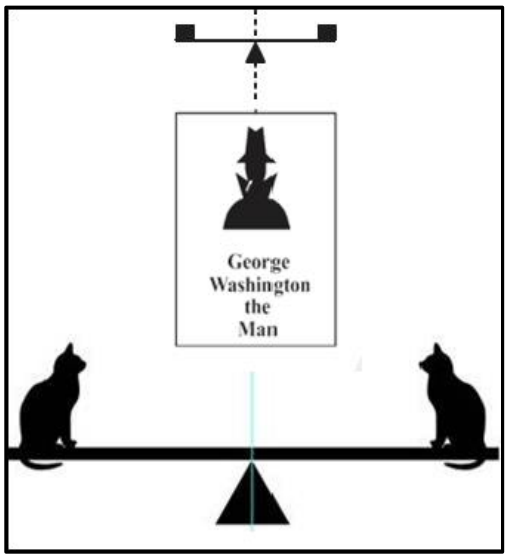


Figure 5: Symmetrical or Formal Balance

b. **Informal or Asymmetrical Balance:** While designing, when the elements of design are positioned without being proportionate to each other, an asymmetrical balance is achieved. Asymmetrical means without symmetry. It implies that there are no mirror images in composition. In most layout work, balance is achieved informally. Elements of similar but not precisely the same

weights are placed in relationship to one another. If a heavy element is placed near the optical center on the right side of the space, the lighter element should be kept away from the optical center on the left side, to counterbalance the bigger element. Handling two or three elements in informal balance is easy. It is more difficult where the number of elements and sub-elements is more.

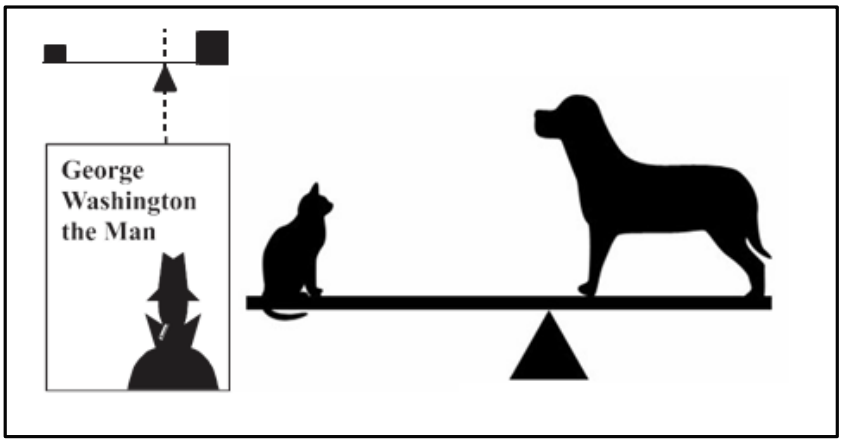


Figure 6: Asymmetrical or Informal Balance

c. **Radial Balance:** Radial balance is, in fact, a symmetrical balance. It is different from other symmetrical designs, because here elements are arranged within a radius. The center point of the radius plays a major role to hold the elements together. Examples of these types of designs are Alpana. Temple ceiling, etc. many formal designs can be made interesting by using the principle of balance. Most flowers are balanced in radial form.

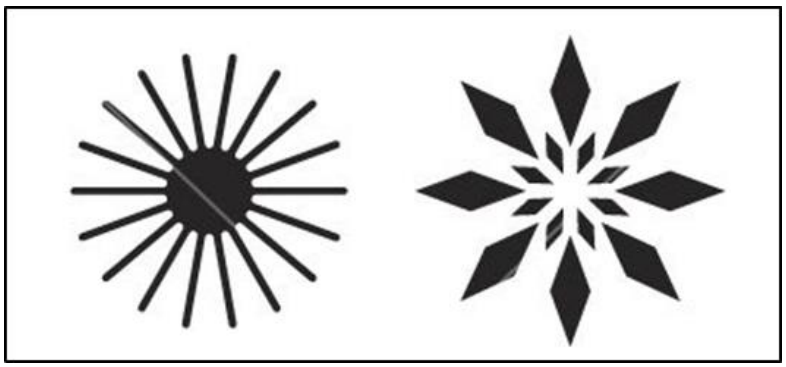


Figure 7: Radial Balance

iii. **Rhythm:** It occurs when a design elements is repeated. It acts as a guide so that the eye reads important parts of a message. It is achieved by a way of smooth flow facilitating eye movement. The basic element of rhythm is repetition. A newspaper page is an example of rhythm in graphic design. Its column grids form a repeating pattern on the

page. The reader's eye spots the rhythm and moves smoothly over the page. Rhythm is produced while designing by the regular repetition of similar: -

- Lines used in design
- Shapes used in design
- Tones used in design
- Colors used in design
- Type font for text matter used in design

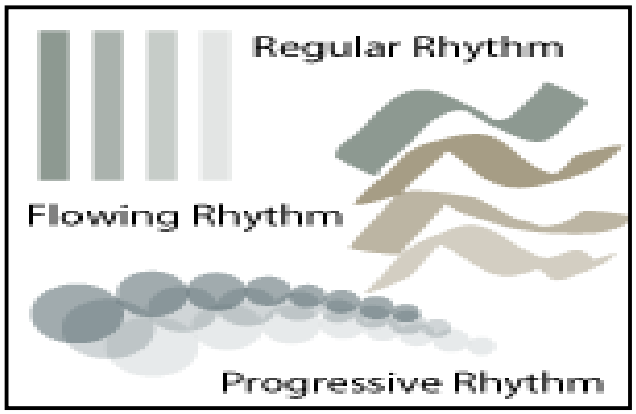


Figure 8: Rhythm in design

iv. **Harmony**: The design elements of a page should be harmonious. One element should go with another element in terms of tone, shape or design characteristics. Shape harmony refers to the general structure of the elements, which are by nature the same.

The same case is with tone and texture. Typographical harmony is more apparent than the shape and tone harmony. Typographical harmony means that the individual characters, including figures, signs and punctuation, are of the same type style, and designed in such a way that they look homogeneous and blend together. In a typographical design, to achieve harmony, select one family and for variation, use different sizes of the same family including bold and italic faces.

Complete harmony is often boring. A magazine designed in the same type will be tedious for the reader. Tone harmony refers to the weights of design elements. A bold illustration goes well with bold lettering. Ornamental borders and ornamental types harmonize

v. **Contrast**: The main function of contrast is to create attention in design. The element that need uniqueness require emphasis. Emphasis or contrast adds variety to a design. Some elements of layout stand out because of contrast. Expressed negatively, the

principle is contrast; put positively, it is emphasis. Emphasis is simply giving importance to a part relatively to others. Emphasis can be achieved by: Placement, Contrast, Action (webpage blinking text/graphics). Contrast can be achieved by making one of the items bigger in size. An unusual shape can create contrast. A darker toned element will stand out within in lighter toned elements. A rough texture has more contrast value than a smooth texture. Some line running horizontally and suddenly a small vertical line appearing on them can create contrast. On a page designed in black and white, a small colored element can give contrast to the page. A few common method to achieved Contrast while designing: -

- Contrast by use of Color
- Contrast by use of Typeface
- Contrast by use of Shape
- Contrast by use of Line
- Contrast by use of Size
- Contrast by use of Orientation of object/element

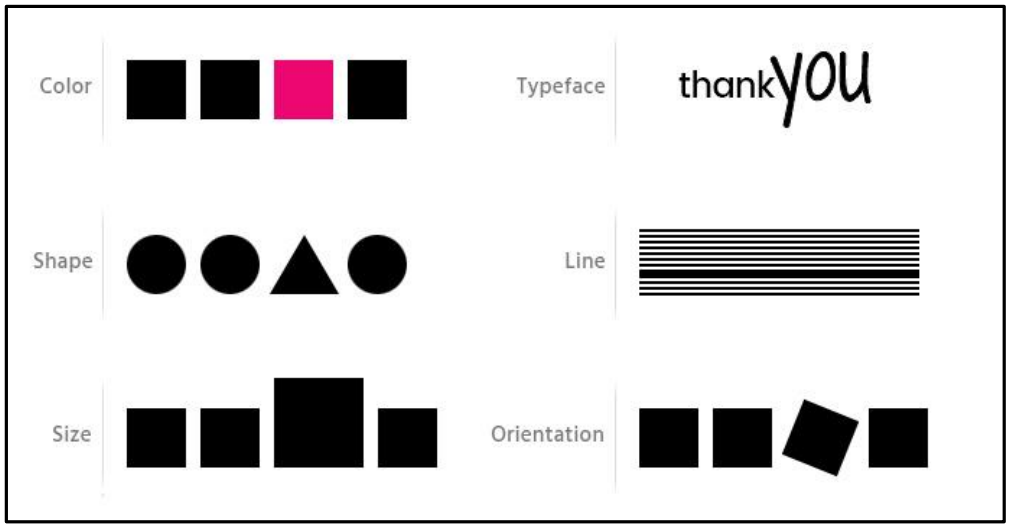


Figure 8: Contrast in design

vi. **Unity or Proximity:** It is the proper balance of all elements to get a pleasing effect as a whole. Individual elements of a design must relate to each other. The image is viewed as one piece as a whole and not as separate element. Unity implies the union of all elements in a layout. Individual elements of a design must relate to each other and to the total design, so that they hold together. A design should be so constructed that its elements are harmoniously combined and comprehended at the first glance as a unified composition. Unity can be achieved in many ways: enclosing everything in a border,

uniting the elements by imaginary lines etc.

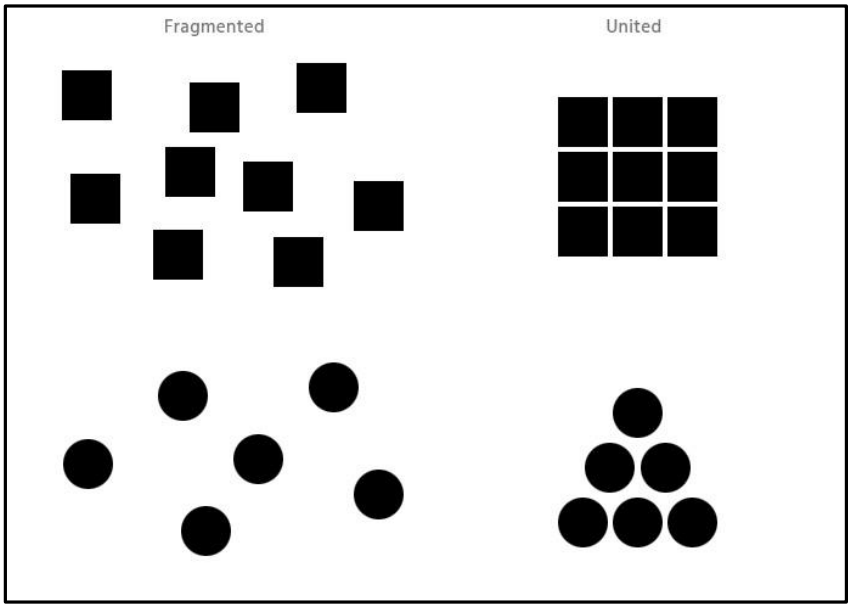


Figure 8: Unity or Proximity in design

vii. **Alignment:** It helps in unifying and creating a visual connection among all the elements on a page whether all the elements are in close proximity to each other or not. It creates an imaginary line which connects all the elements. It can be considered another aspects of unity also.

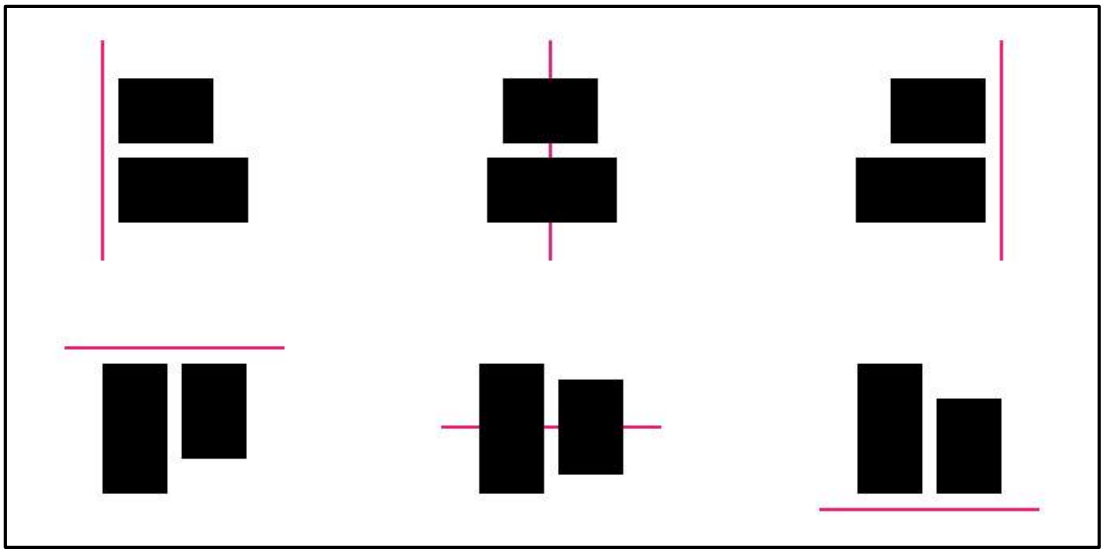


Figure 9: Alignment in design

viii. **Simplicity**: Simplicity in a design lives to an easy comprehension of picture. It helps to achieve clarity. Simplicity transmits an idea more quickly than ornamentation. The

design can be potently effective by using less non-information-bearing elements, few type styles and equally few shapes and sizes of art.

2.2.3 IMPORTANCE/CHARACTERISTICS OF GOOD DESIGN

A good design always helps to produce the desired result with almost effect which means it should communicate the message to the targeted audience without any alteration. Good design always takes the benefit of all the scientific approaches and delivers the result accordingly. A good design helps to produce better result without any time and resources problem. The importance of a good design can be summarized as follows:

- **A design should deliver the indexed information**–The information related to that particular design. It must give the whole information instantly as the customers or viewers see it. It should be capable of holding the reader's attention. It should be presented in such a manner which attracts the consumer immediately.
- **Optimum utilization of available space** – The space used for designing a design should be used or utilized properly. Proper placement of design should be there and should not feel awkward.
- **Principle of design follow strictly** – It means that the design & other illustrations must be have rhythm, balance, scaling, unity and in proportion & must follow these principles.
- **Proper position of text and graphics** – Text and graphics should be placed on the proper position as per requirement. Both must co-relate each other otherwise it may look untidy. i.e. the arrangement should be in scientific manner.
- **Proper color combination** – It is quite sensitive to use colors in the illustrations or designs. Color has the great effect on the sale of the product. Proper color combination should be there for its good and bright appeal.
- **Taking care of available facilities** – A design should be designed in considering or taking care of facilities available for a designer. i.e. the designer must have the optimum use of resources and facilities available for a design.
- **Simplicity** – A design should be as simple as we can make it. It should not look so vivid but simple in the sense that it appeals the customer. i.e. a good design is simple and scientific in nature. It should be capable of proper understanding. It should not use ornamental and tough words rather short, simple and properly understandable words.
- **Economical** – Everything is designed by considering it cost. A design should be economical as much as it can be.

- It should have efficient **legibility and readability.**
- **Suggestive** – The design should be capable of suggesting the customer about the utility and use of the product. Effective slogans can be used to give suggestions. E.g. 'protect your life with State Bank of India'.
- **Conviction Value** – The design shall be to able have ever lasting impression on the customer.
- **Education** – The design should tell the people about the use and operation of a product. It should have **memorizing value.**
- **It should be true** – It should not misrepresent and conceal the true facts about the product.

Good design also requires that the designer takes into account other considerations:

- **Functionality**: - Does the object function as it was intended? And is the object designed to require little maintenance?
- **Safety**: - Is the object safe to use? And does the object conform to standards and regulations?
- **Ergonomics**: - Does the object's design (size, shape, materials) suit the user?
- **Appearance**: - Is the object's appearance appealing? And does the form follow function. i.e. does the object's appearance suit its use?

A **good design** not only solves a problem, but does so in an artful and elegant way. Reliability and cost effectiveness are important considerations. A good design is often simple, effective and efficient, with minimal use of resources and energy. The successful designer understands both the elements and principles of design.

2.3 CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

CHOOSE THE RIGHT OPTION.

1. The ratio of breadth to length in the Golden Rectangle is :
    a) 3:2
    b) 2:3
    c) 3:5
    d) Depends upon the design
2. Which is the smallest element of Design?

a) Line
b) Point
c) Type
d) Color

3. Radial Balance is a type of
   a) Informal Balance
   b) Formal Balance
   c) May be Both
   d) None of these
4. The shape or figure that you create on the page while developing design is called_____.
   a) Negative Space
   b) Positive Space
   c) Design
   d) Proportion
5. Which one of the following is not a Design Principle?
   a) Contrast
   b) Emphasis
   c) Texture
   d) Proximity
6. An area enclosed by line, curve usually perceived is known as
   a) Shape
   b) Tone
   c) Texture
   d) All the above
7. Point which can be felt but not seen and the eye hits a spot known as
   a) Optical Centre
   b) Geometric Centre
   c) Both
   d) None
8. Optical center lies _____the geometrical center.
   a) Above
   b) Below
   c) Anywhere

d) On the same position

2.4 SUMMARY

- Design is a basically a plan for preparing an object, system. Designing is a process because it is an ongoing series of activity. The person who creates or produces design is called designer. The word Graphics is originated from the word graphikos, which means to draw.
- Graphic design is a creative process in which both art and technology are combined to communicate ideas. So in order to convey a message the designer works with a variety of communication tools including typography and image.
- Design is an idea created in one's mind. It is used by artists and graphic designers as language of vision to communicate.
- Elements of Design are Point, Line, Shape, Tone, Texture, Color, Type and Space.
- To express the ideas and create a visual composition Artists and Designers use design as a language. In order to create an effective design all the design elements should be placed according to some set of rules and regulations known as principles of design. These are explained as Proportion, Balance, Rhythm, Harmony, Contrast, Unity or Proximity, Alignment and Simplicity.

2.5 KEYWORDS

Graphic design: It is a creative process in which both art and technology are combined to communicate ideas. So in order to convey a message the designer works with a variety of communication tools including typography and image.

Design: It is an idea created in one's mind used by artists and graphic designers as language of vision to communicate.

Point: Point in design is an element which can be seen clearly either as a visual structure or as an action in a visual element. It may be Real and Imaginary. Real Point is a position in space, which holds a strong attraction for the eye. Imaginary Point is one, which can be felt but not seen.

Line: Extending a point in any direction to obtain a line. It may also be defined as the shortest distance between two points. Similar to point, a line may be real and imaginary. Line can be

straight or curved, heavy or light, smooth or rough, continuous or broken, and real or imaginary and each line creates a specific mood while designing.

Shape: It is an area enclosed by lines and curve. Basically there are three basic shapes; square, circle and triangle from design perspectives. Numerous combination these shapes are used while designing.

Tone: The relative lightness or darkness of a surface quality is called tone. It help us to perceive an object in 3 dimensional forms even on a two-dimensional surface.

Space: Space is used to give a pleasing effect to the printed product. There may be positive space and negative space.

Design Principles: Design is as language used by artists and designers to express the ideas and create a visual composition.

Golden Rectangle: The most pleasing shape is a rectangle. The ideal rectangular shape having ratio of breadth to length is 2:3 is known as a golden rectangle.

Balance: It is defined as, "a state of rest due to action of force that counteract each other". The balance principle also acts as the principal of gravity. There are three types of balances in designing which includes Formal or Symmetrical balance, Informal or Asymmetrical balance and Radial balance. **Rhythm:** It occurs when a design elements is repeated. In the other words, the basic element of rhythm is repetition. Rhythm is produced while designing by the regular repetition of similar lines, shapes, tones, colors and type font used for text matter.

Contrast: The main function of contrast is to create attention in design. Contrast can be achieved in designing by using color, typefaces, shapes, line and size etc.

Unity: It is the proper balance of all elements to get a pleasing effect as a whole. Individual elements of a design must relate to each other. Unity implies the union of all elements in a layout. Individual elements of a design must relate to each other and to the total design, so that they hold together.

Alignment: It helps in unifying a visual connection among all the elements on a page whether all the elements are in close proximity to each other or not. It may be central, left, right and justified depending upon the type of design.

2.6 SELF-ASSESSMENT TEST

1. Define Graphics Design. What are the factors taken into consideration while developing any graphics design?
2. Write in detail about Point and Line, their importance in designing.
3. Write in detail about different elements of design.
4. How color play a vital role in design?
5. What do you mean by Principles of design? Explain various principle.
6. Define balance. Explain different type of balance achieved while designing.
7. What do you mean by alignment? What are its different types?
8. "Unity is one of the crucial element which we need while deigning." Justify this.
9. What do you mean by Good design?
10. What are the characteristics of a good design? Enlist them.

2.7 ANSWERS TO CHECK YOUR PROGRESS

1. a) 3:2
2. b) Point
3. b) Formal Balance
4. b) Positive Space
5. c) Texture
6. a) Shape
7. a) Optical Centre
8. a) Above

2.8 REFERENCES / SUGGESTED READINGS

1. Art and Production by NN Sarkar.
2. Visual Design & DTP By N.Sivaraman, G.Venkateswaran
3. https://www.slideshare.net/Ashbenn/colour-and-tone
4. http://www.artisan-ds.com by Patrice Roarke, Creative Director and owner of Artisan Design Studio.
5. https://www.inzonedesign.com/blog/6-principles-of-design

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: MR. VIKAS JANGRA
LESSON NO.: 3	VETTER: MR. AROHIT GOYAT
TYPE AND TYPEFACES	

STRUCTURE

3.0 LEARNING OBJECTIVES

After reading this lesson, you will be able to:

- **Understand about Printing Type.**
- **Know about classification of types.**

3.1 INTRODUCTION

The word '**Type**' is originated from the Greek word '**typo**' which means impression. The 'types' are used by printers for composing and printing are called **'Printers types'** or **'printing types'.** It is a three dimensional rectangular piece of metal or wood which consists of a two dimensional printing image on its upper surface. Generally the metal types are used for letterpress printing has become obsolete and hardly seen in the presses today because of

printing has almost vanished as new technology had entered in this arena. The printing types are made up of an alloy which consists of lead, tin and antimony. The printing surface of a type is slightly raised in relief so that when the types are inked and pressed against paper, only raised printing surfaces receive ink and transfer its impression onto the paper. Type is the design of the Character.

3.2 STRUCTURE OF TYPE

The structure of Type as known as '**Type Dimensions**' which consists of three main dimensions of letterpress printing type:

- The Body
- The Width
- The Height

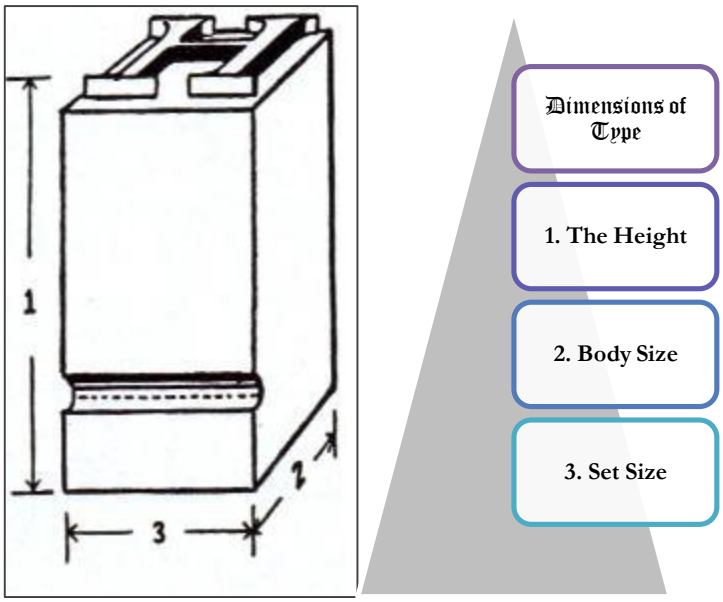


Figure: Dimensions of Type

- **The Height:** It is the third dimension of a type and represents the distance between the upper printing surface and the bottom of the type. It is also called the 'height-to-paper 'and is constant for all types in a country. Being the distance between the paper or pressing surface and the type bed of a machine, accurate type height is essential for a uniform quality printing from the types in letterpress printing. The standard type height in India, Australia, Canada, UK, Italy and USA is 0.918" while in Egypt, France, Germany, Spain, Turkey and Switzerland it is 0.928".

- **The Body:** The distance betweenthe front and back of thetype which is measured in points. Therefore it is also known as 'Point Size'. This distance varies in types of different sizes. This first dimension of the type is also called the 'body size' and 'type size'. The metallic and wooden types are available in various sizes. Metallic types ranging from 4 point to 72 point whereas types bigger than 72 point are usually made of wood keeping in view of weight of the types.

  Point is the smallest unit of measuring types, spacing materials used in printing industry and the method is called 'Point system'. Some common measurement used in

Sr. No.	Measurement	Point
1.	One Inch	72 points
2.	One em pica	12 points
3.	One Inch	6 em pica
4.	One em	2 en

Table: Type Measurement

- **The Width**: This is the second dimension of a type and is also known as 'set size'. The width of a type is determined by its thickness. The capital 'W' is much wider than lowercase letter 'i'. The width of each character on a metallic type has little extra space on both the right and the left sides to allow the character to combine pleasingly when printed together in the form of words. Set size represents the wholesome variation of width of all characters in order to create various type designs such as, roman, condensed, expanded etc. The width or set is measured in a special unit called 'unit', which is usually 1/8th of the type size. One '**em**' of the type size is divided into 18 parts in the 18unit system.

1. PHYSICAL STRUCTURE OF TYPE

A printing type seems like a simple rectangular piece of a metal but technical point of view it has numerous parts designated by their particular technical names. These part of printing type play a vital role while composing. These parts are enlisted as below:

1. **Face**: It is the uppermost flat surface of the type which is covered with ink and comes into the contact with the paper in the actual process of printing. It includes the entire design of the letter or character and leaves its replica impression on the printing surface.
2. **Serif**: It is a small line, arc or bracket used at the top and bottom of the various main strokes of a character. The serif increases the beauty and the readability, visibility,

&readability of the design of characters.

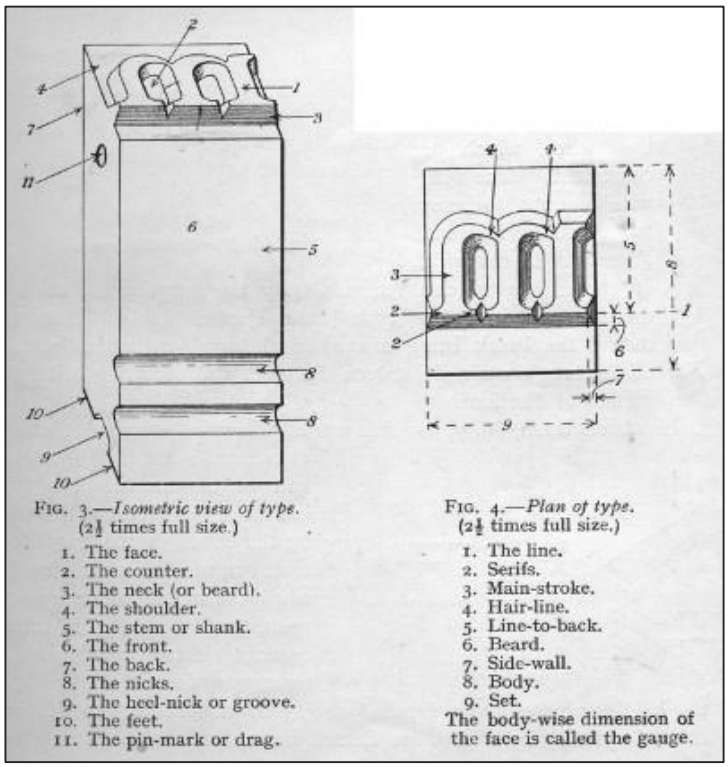


FIG. 3.—*Isometric view of type.* (2½ times full size.)

1. The face.
2. The counter.
3. The neck (or beard).
4. The shoulder.
5. The stem or shank.
6. The front.
7. The back.
8. The nicks.
9. The heel-nick or groove.
10. The feet.
11. The pin-mark or drag.

FIG. 4.—*Plan of type.* (2½ times full size.)

1. The line.
2. Serifs.
3. Main-stroke.
4. Hair-line.
5. Line-to-back.
6. Beard.
7. Side-wall.
8. Body.
9. Set.

The body-wise dimension of the face is called the gauge.

Figure: Anatomy of Type

3. **Head:**It is the top of the back of the shank.

4. **Shank:** It the main body of the type which supports the face. It is rectangular body of the type between the shoulder and the feet.

5. **Bevel:** It is the slope from the bottom face edge line to the shoulder of the type.

6. **Shoulder**: It is the flat area of the top of the shank on the belly on front side of the type. The shoulder starts from where the bevel ends.

7. **Beard:** The bevel and shoulder taken together form beard of the type. In other words, it is the portion of the type which runs vertically or at sharply sloping angle from the face to the flat surface upon which the face rests.

8. **Counter**: It is the open non printing area between the lines of a type face and it is slightly higher than the shoulder. The fully rounded areas of counter are called “bowels “and the elliptical bowels are known as loops.

9. **Pin Mark:** It is a circular for triangular cavity on the right side of the type bearing the name of the manufacturer for the size of the type in points. The pin mark is found only on

foundry made types.

10. **Nick**:it is a groove cut across the belly of the shank. Its position and number varies in different type fonts, but all the types in one font have a similar nick. The nick help the compositor in the correct placement of types in a stick while composing. Sometimes, an additional nick is provided at the back of the small capital letters to distinguish them from the lower case letters c, s, v, w and z.

11. **Belly**: The front side of the shank bearing nick is called 'belly' or 'belly of the shank'.

12. **Feet:** These are two pillars at the bottom of the shankon which the types stand. They are separated by a groove between them. The feets run from one side to the other side of the shank. One feet is located at the bottom of the belly and the other at the bottom of the back of the shank.

13. **Groove:**It is a cut between the feets of a type and run across the full width of the type. While casting type a 'jet' or 'tag' is formed at the bottom of the type which is broken off later and the type is planed or grooved at the bottom.

14. **Back of Shank:** The side parallel to the belly of Shank having head of the type at the top is called 'back of shank'.

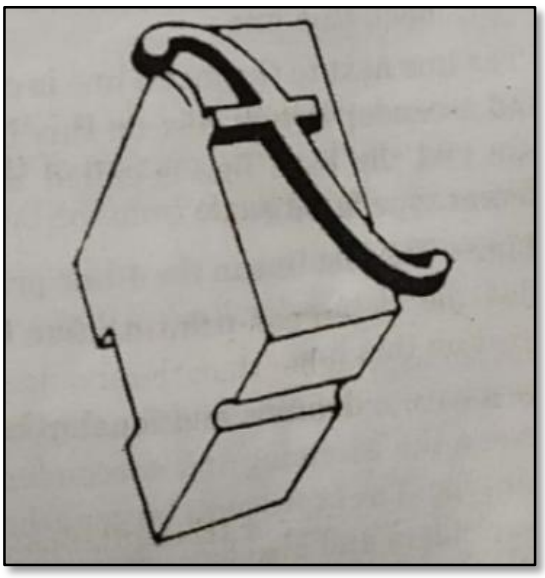
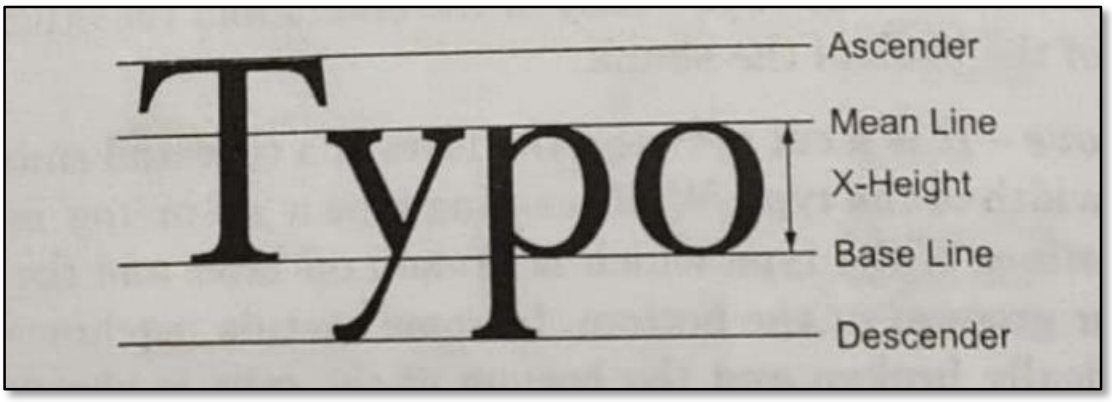


Figure: Kern Letter

15. **Kern:** It is an overhanging portion of a letter which rests on the shoulder of subsequent type in composing. For example, the overhanging portion of letter italic 'f' rests on the shoulder of the next type.

2. DESIGN ASPECTS OF A TYPE

The printing image or the face on the top of printing type is a two-dimensional design consisting of various strokes called ‘fundamental strokes' and ‘finishing strokes' the strokes help in the identification of type of various type families. The design of letters conform to the basic 4- line principle of drawing alphabets. All the alphabets are drawn within the four lines known as ascender lines, mean line, base line and descender line.



Basic 4-line Principle of Drawing Alphabets

1. **Ascender Line:** It is the first line in the 4-line principle of drawing alphabets. The top of all the capital letters touch this line and, therefore; it is also known as a ‘cap line'. The lowercase letters which touch this line at the top are called ‘ascender letters' they are b, d, f, h, k, l and t.

2. **Mean Line:** It is the second line, that is, the line next to the ascender line. The top of all the descender letters (g, j, p, q and y) and x-height letters (a, c, e, I, m, n, o, r, s, u, v, w and x) falling between the x-height touch this line.

3. **Base Line:** The line next to the mean line is called a 'base line'. All the capital and ascender letters rest on this line. The distance between the mean and the base line is called 'x-height' and this varies in the different type families.

4. **Descender Line:** The last line in the 4-line principle of drawing alphabets is called the 'descender line'. All the descender letters g, j, p, q and y) rest on this line.

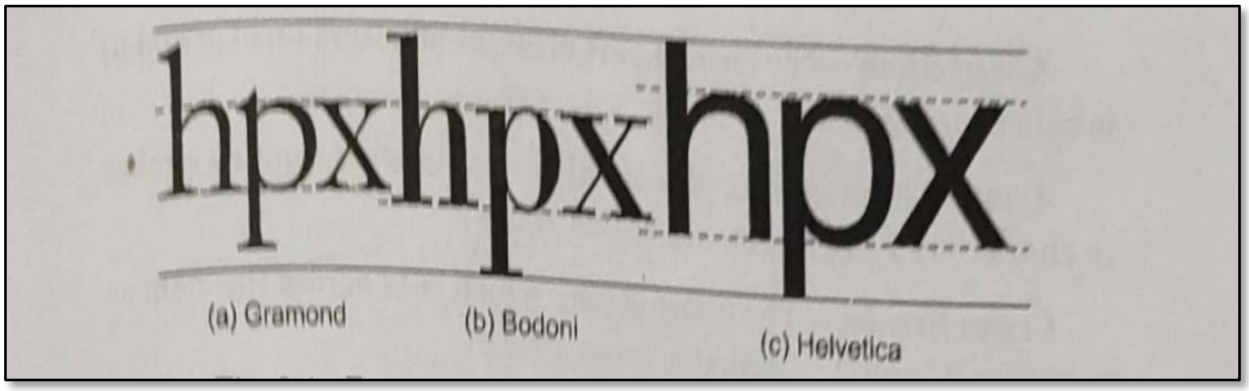


Figure: Type of the Same Size with Different x-Heights

The above lines have a definite relationship between them and the distance between the ascender and descender line governs the size of a particular type. The types with larger x-height have shorter ascenders and descenders and also have more legibility. The larger x-height makes the letters to look bigger in size.

i. **Fundamentals Strokes of Type:** The straight and curved lines forming the main design of the letters are called 'fundamental strokes'. They are as follows :

- **Stem:** The main thickest vertical or oblique stroke of a character is called 'stem'.
- **Hairline:** The thin line or curve in a character is called 'hairlines'. There is a definite proportion between the thick and thin strokes of the character and it remains constant in all the typefaces within a type family. If the roman types have a proportion of 1: 3 then the bold type may have are proportion of 2: 6.
- **Spine:** The thickest nerve in a character is called 'spine'. It is either vertical or at any inclined angle which is also known as 'angle of stress'or 'angle of emphasis'. This angle is different in different type families.
- **Apex:** The point where the stem and hairlines join at the top of letter is called 'apex' as in case of letters A, M and W.
- **Vertex:** The point where the stem and hairlines join at the bottom of a letter is called 'vertex' as in case of letter M, V and W.

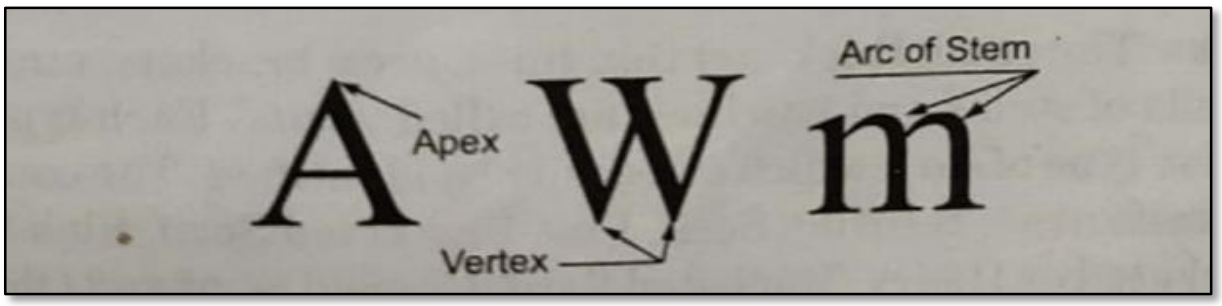


Figure: Fundamentals Strokes of a type

- **Arc of Stem:** The curved part of stems of letters (a, m, n and u) is called 'arc of stem'.
- **Arms**: The projecting horizontal or short upward slanting strokes in characters F, T, K, etc. are called 'arms'.
- **Cross Stroke**: The short stroke which cuts across the stem as in letters 'f' and‘t’is called a 'cross strokes’.
- **Bars:** The horizontal strokes joined from both the sides are called 'bars'. For examples, the horizontal bars in character 'A' and 'H'.

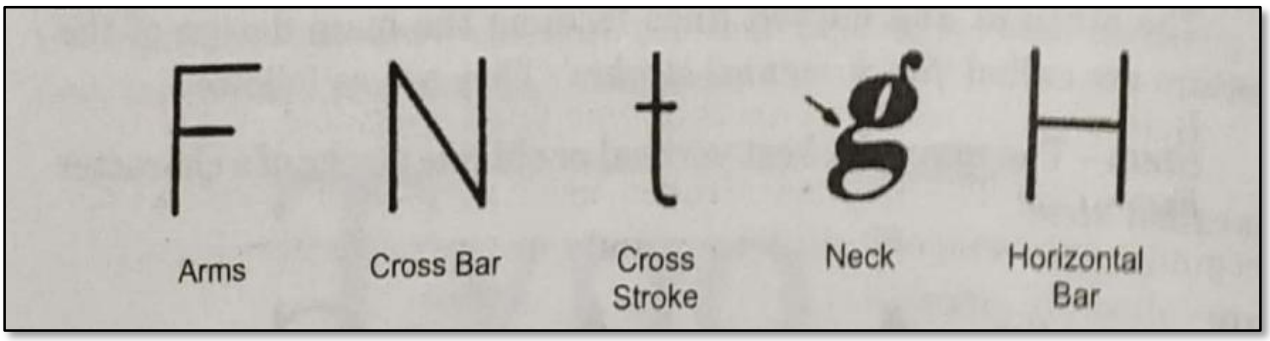


Figure: Fundamentals Strokes of a type

ii. **Finishing Strokes of Type:**The lines or designs at the apex, vertical at the corners of the various strokes of the typefaces used to increase the beauty of the type design are called 'finishing strokes'. They are as follows:

- Serifs: The small thick and thin lines, arcs, brackets, etc. used at the head of stems and hairlines are called ‘serifs’. Each type has a particular type of serif which can easily be identified. The common types of serifs are –Hairline Serif, Fine Bracketed Serif, Slab Serif, Slab Bracketed or Heavy Bracketed Serif, Cupped Serif and Oblique Serif.

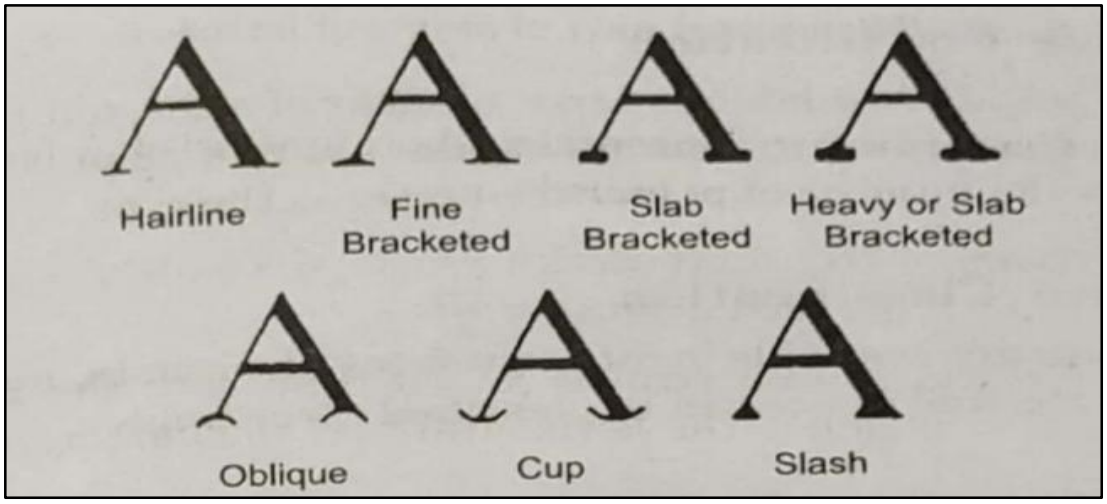


Figure: Serifs Finishing Strokes

- **Beaks:** The serifs on arms of typefaces are called 'beaks'.
- **Finials:** The hooked strokes used in place of serifs at the beginning and end of italic letters and some roman letters l, m and u are called 'finials'.
- **Ear:** The short curved finishing stroke on the bowel and stem (e.g. in letter 'r') is called 'ear'.
- **Swash:** A finished tail to the face of the characters is called 'swash'.
- **Terminal:** The horizontal, vertical or angular finish of strokes in types having r o serifs is called a 'terminals'. The angular terminals also called 'slanting terminals', with less than 90° slant and more than 90° slant are termed as acute and grave terminals respectively. The types without serifs are also called 'san serif types'.

3. CLASSIFICATION OF TYPES

These are large number of types in various designs and sizes used for the manufacture of printing materials. Each type has its own characteristics and sphere of use. In order to use them properly and intelligently, it is essential to know the following classification of types:

i. **Case Classification:** The printing types are normally stored in two wooden cases called'the upper case' and 'the lower case'. The upper case on a rack is kept at a higher level and mainly contains capital letters, small capitals and figures. The lower case is kept at a lower level in in front of the compositor and mainly contains types of small alphabet and line spacing materials. The small alphabets are also called'lower case letters'. In other words, in case classification, the types can be classified to capitals and lower case letters.

ii. **Size Classification:** The types are available in large number of sizes and hence can be classified according to their point size, e.g. 6 pt., 8pt, 10 pt., etc. The higher the number of points the bigger is the type.

iii. **Face Classification:** The types are available in different faces like roman, italic, bold, bold italic, etc. and hence can be classified accordingly.

iv. **Series Classification:** The group of typefaces with same fundamental and finishing strokes but with variation in standard width represent a series. The type in series classification can be designated as expanded, condensed, extra condensed, etc.

v. **Family Classification:** A group of types in different sizes, series and faces but with same fundamental and finishing strokes, constitutes a family. The family completes a type design and is usually designated after the name of its designers, e.g. Bodoni, Caslon, Baskerville, etc.

vi. **Group Classification:** A group constitutes large number of type families designed by different type designers but have similar characteristics in term of design structure, x-height, angle of emphasis, serifs and the contrast between the thick and the thin strokes.

All the type families have been divided into 10 groups depending upon their historical period of origin.

vii. **Gothic Group**: These types, e.g. Old English were developed by Guttenberg and William Caxton in 1476. They are drawn with the scriber with plenty of hair lines. The strokes are heavily decorated but the lower case letters consists of dashes is without any curves.

The types of this group have a good x-height with oblique angle of emphasis and extreme contrast. The serifs consist of hooks attached to the ends of the strokes.

a. **Humanist Group**: These are the earliest Roman letters engraved by Venetian printers in the 15th century and hence also called 'Venetian'. The famous designers and type families of this group are Nicholas Jenson, Cloister Venezia, Centaur, etc.

The type designs are drawn with a quill pen with minimum contrast. The x-height of the characters is very small. The capitals are of the same height as the ascenders of lowercase letters. The angle of emphasis is 45° and the types are heavily bracketed.

b. **Old Face or Garaldes Group**: These 16th and 17th Century types perpetuate the Noble and gracious style of the Franco Indian Renaissance. The designer and type families of this group are Aldus Manitius, Bookman, Jean Kannon, Caslon, Garamond, Bembo, Plantin, etc.

These are little refined types with more elegant proportions and better contrast in the upward and downward strokes. The capital letters are usually shorter than the ascenders of the lower case letters. The x-height is a little bigger than the Venetian. The angle of emphasis is oblique and that types are provided with bracketed serifs.

The characters in the above three groups are drawn by free hand without the use of geometrical and precision instruments.

c. **Transitional Group:** These form the transition between the old and the modern face and represent 18th and 19th Century of the historical period.The famous designers and type families of this group are Bell, Baskerville, Scotch, Bulmer, Caledonia, etc. The characters of this group are drone with precision drawing instruments to achieve geometrical shapes. The faces are narrower than those of Garaldes. The x-height average and the angle of emphasis is 45°. The types are provided with fine bracketed Serifs.

d. **Modern or Didonesgroup:** These are the 19th and the 20th Century types with harsh contrast between thick and thin strokes. The characters are drawn with precision instruments and have exact geometrical shapes. The famous designer and type family group is Bodoni.

The x-height of the character is maximum. The legs and arms are short. The angle of emphasis is 90° and the strokes are attached with fine hairline serifs. This modern type is best for stereotyping jobs, which ensure no filling-up of letters.

e. **Contemporary Group**: These are 20th Century types drawn with precision instruments. The shapes of the strokes are not perfect but have pleasing irregularities. The types look aesthetically good, have maximum x-height and a definite angle of emphasis, say 45°. The types have fine bracketed serifs. The famous designers and type families of this group are Times New Roman, Perpetua, Minerva, Ionic, Egment, Electra, etc.

f. **Slab Serif or Egyptian Group:** These are also 20th Century types with maximum x-height, no contrast and no emphasis. The designers and type families of this group are Egyptian, Cairo, Clarendon, Benton, Memphis, Stymie, etc. These types have slab serifs of the same thickness.

g. **Sans Serif or Lineable Group**: These are perfectly saved 20th century types drawn with precision instruments. These are made-up of lines and have no serifs. The x-height character is maximum. Types to not have contrast and emphasis. The important designers and type families of this group are Gill Sans, Univers, Spartan, Gothic,

Temp, Erbar, Vogue, etc.

h. **Script Group**: These are 20th Century types mainly used for social occasions e.g. invitations, personal messages and for publicity purposes. This group covers calligraphically written characters in free-hand style. In the typography of characters in this group some letters linked each other while others nearly lead onto the next.

i. **Miscellaneous Group:** All other types developed in the 20th Century and which have not been covered in the above 9 groups fall in this group. For example, types with decorative lines, double lines, shaded types and other display type families. The types in this group have varied x-height, contrast, angle of emphasis and serifs.

4. TYPE FACE

Typeface is a set of characters, numbers and figures etc. of the same design based on a particular fundamental and finishing strokes. These type face characters also include letters, numbers, punctuation marks and symbols. Some common typefaces include Arial, Helvetica, Times New Roman, Garamond and Verdana etc. For example 'Verdana' is a typeface, while Verdana 10 point is font size.During the olden day the most tedious and laborious task was to compose every page and set out in frames with metal letters. Then it was rolled in ink and subsequently using an impression pressure, the ink was transferred on to the substrate. During these days, Printers needed thousands of physical metal blocks, each with the character it was meant to represent set out in relief (the type face). For instance, if one need to print Old English, then different blocks for every different size (10 pt, 12 pt, 14 pt and so on) and weight (bold, light and medium) are required.

Metal Type: Theterms typeface and font can be differentiated. Let us consider, Old English is the typeface, then it describesnumerous metal blocks a printer might have on hand and which had been designed with the same basic design principles. But term font is somewhat different entirely. A font describes a subset of blocks in which typeface varies, but each font embodied a particular size and weight e.g. bold Old English in 12 pt.is considered a different font than Old English normal in 8 pt., and italicized Times New Roman at 20 point would be considered a different font than italicized Times New Roman at 30.

5. COMMON TYPE FACES

Printing types are manufactured in different sizes (6 point to 72 point) in large number of designs. They are used in the setting of text, tabular and display matters. The selection of type for a particular job depends upon the choice and taste of the individual designer. A few

typefaces have been given here for the readers:

Figure: Type Faces in English and Hindi

Factors to be considered:

- Know the various important typefaces being used for composing.
- Differentiatethe similar typefaces, e.g. differentiate Gill Sans from Universe.
- Differentiate appearance of the typefaces in the printed documents.
- Designstructure of alphabets and figures in various type fonts.

6. CHOOSING A RIGHT TYPEFACE IN DESIGN LAYOUT

A prominent rule while choosing the text for a layout, then always prefer a good serif font because of the fact that that a serif type face is one of the easiest typefaces to read. Serif typeface offers more readability and hence more fluently while reading. Understanding typography is very vital for being successful in design layout. The choices with typography enables the difference between a good design and a great one. The first and foremost step about typography comes in selecting the right typeface. Different typefaces convey their own feelings to the viewer. Graphicdesigner perspective inevitably requires working with a lot of text whether that is a book layout, a magazine layout or even a catalog. Somebasic fundamentals of typography, and how to determine the right typeface and layout. Anatomy of Letter forms there are literally thousands of fonts out there and not every type face is appropriate for every design. The first step to knowing what font to use for your project is to know what makes up type.

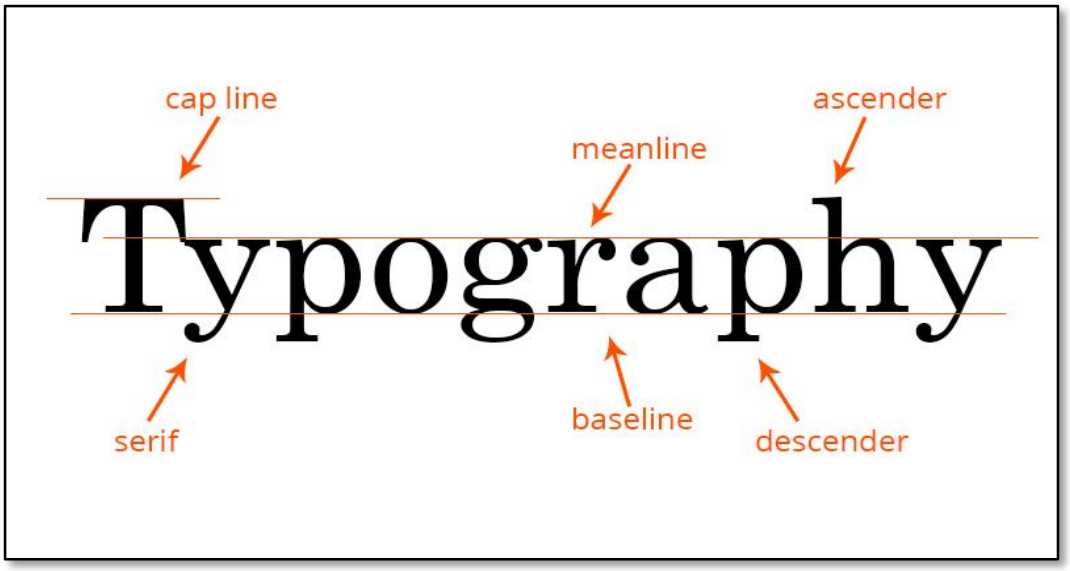


Figure: Anatomy of Type/Letter

- **Cap and Base Line**: The boundary that defines the top of an uppercase letter is called the cap line. The line that defines the bottom of the letters or where the letters sit is called the base line.
- **Mean line**: The mean line represents the height of all the lower case letters.
- **Ascender:** There are some letters like h, b and f that go above the mean line. These portions of the letter are called ascenders.
- **Descender:** Similar to an ascender, a descender is the portion of a letter like p, q, y and g that go below the baseline.
- **Serif:** The little foot shapes or extra strokes that are typically on letters are referred to as a serif. While a sans-serif font just means the font does not have those extra strokes added to the letters. The term comes from the French word sans, meaning "without". In this case, sans-serif means without serifs.

3.3 CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

CHOOSE THE RIGHT OPTION.

1. The word ‘Type’ means

   3.3.1.1 Impression

   3.3.1.2 Font

   3.3.1.3 Font face

3.3.1.4 Font style

2. All the capital and ascender letters rest on _____ line.

3.3.2.1 Ascender Line

3.3.2.2 Mean Line

3.3.2.3 Base Line

3.3.2.4 Descender Line

3. The distance between mean line and base line is called_____.

3.3.3.1 X-height

3.3.3.2 Mean height

3.3.3.3 Type size

3.3.3.4 Type dimension

4. The flat area of the top of the shank on the belly on front side of the type

3.3.4.1 X-height

3.3.4.2 Pin Mark

3.3.4.3 Shoulder

3.3.4.4 Bevel

5. It is the open non printing area between the lines of a type face and it is slightly higher than the shoulder.

3.3.5.1 Bevel

3.3.5.2 Head

3.3.5.3 Feet

3.3.5.4 Counter

6. Roman, italic, bold and bold italic type are the classification of a type on the basis of :

3.3.6.1 Case Classification

3.3.6.2 Face Classification

3.3.6.3 Family Classification

3.3.6.4 Group Classification

7. The uppermost flat surface of the type which is covered with ink and comes into the contact with the paper

3.3.7.1 Belly

3.3.7.2 Type Face

3.3.7.3 Head

3.3.7.4 Bevel

8. An overhanging portion of a letter which rests on the shoulder of subsequent type in

composing

3.3.8.1 Kern

3.3.8.2 Shoulder

3.3.8.3 Beard

3.3.8.4 Beaks

9. Select which one of them is not a finishing stroke.

3.3.9.1 Serifs

3.3.9.2 Swash

3.3.9.3 Vertex

3.3.9.4 Ear

10. The point where the stem and hairlines join at the top of letter is called_____.

3.3.10.1 Apex

3.3.10.2 Vertex

3.3.10.3 X-height

3.3.10.4 Swash

3.4 SUMMARY

- The word '**Type**' is originated from the Greek word '**typo**' which means impression. The 'types' are used by printers for composing and printing are called **'Printers types'** or **'printing types'.**
- The structure of Type as known as '**Type Dimensions**' which consists of three main dimensions of letterpress printing type the Body, the Width and the Height.
- A printing type seems like a simple rectangular piece of a metal but technical point of view it has numerous parts designated by their particular technical names. These part of printing type play a vital role while composing. These parts are Face, serif, Head, Shank, Bevel, Shoulder, Beard, Counter, Pin Mark, Nick, Belly, Feet, Groove, Back of Shank, Kern
- The printing image or the face on the top of printing type is a two-dimensional design consisting of various strokes called 'fundamental strokes' and 'finishing strokes' the strokes help in the identification of type of various type families. The design of letters conform to the basic 4- line principle of drawing alphabets. All the alphabets are drawn within the four lines known as ascender lines, mean line, base line and descender line.
- Typeface is a set of characters, numbers and figures etc. of the same design based on a

particular fundamental and finishing strokes. These type face characters also include letters, numbers, punctuation marks and symbols. Some common typefaces include Arial, Helvetica, Times New Roman, Garamond and Verdana etc.

3.5 KEYWORDS

Type: It is a three dimensional rectangular piece of metal or wood which consists of a two dimensional printing image on its upper surface. The word 'Type' means impression. These 'types' are also known as 'Printers types' or 'printing types' because these are used by printers for composing and printing.

Structure of Type: The structure of Type as known as '**Type Dimensions**' which consists of three main dimensions of letterpress printing type which includes type body, type width and type height.

Physical Structure of Type: Physically printing type is a rectangular piece of a metal which has different parts designated by their particular technical names and these part of printing type play a vital role while composing.

Type Face: The uppermost flat surface of the type which is covered with ink and comes into the contact with the paper while printing. It includes the entire design of the letter/character and its replica is called impression on the printing surface.

Pin Mark: A circular for triangular cavity on the right side of the type represents name of the manufacturer for the size of the type in points which is found only on foundry made types.

Kern: An overhanging portion of a letter which rests on the shoulder of subsequent type while composing e.g. the overhanging portion of letter italic 'f' rests on the shoulder of the next type.

Ascender Line: It is the uppermost line in the 4-line principle. The top of all the capital letters touch this line and hence is also known as a 'cap line'. The lowercase letters which touch this line at the top are called 'ascender letters' e.g. 'b, d, f' etc.

Mean Line: It is the second line in the 4-line principle which is next to the ascender line. The top of all the descender letters (g, j, p, q and y) and x-height letters (a, c, e, I, m, n, o, r, s, u, v, w and x) falling between the x-height touch this line.

Base Line – The line next to the mean line is called a 'base line'. All the capital and ascender letters rest on this line. The distance between the mean and the base line is called 'x-height' and this varies in the different type families.

Descender Line: The last line in the 4-line principle of drawing alphabets is called the 'descender line'. All the descender letters g, j, p, q and y rest on this line.

Fundamentals Strokes of Type: The straight and curved lines forming the main design of the

letters are called ‘fundamental strokes'.

Finishing Strokes of a Type: The lines or designs at the apex, vertical at the corners of the various strokes of the typefaces used to increase the beauty of the type design are called 'finishing strokes'.

3.6 SELF-ASSESSMENT TEST

1. Define Printing Type.
2. Explain dimensions of type.
3. What do you mean by physical structure of Printing Type? Explain its different technical part.
4. Explain different design aspects of a printing type.
5. What do you mean by 4-line principle? Explain in detail.
6. Enumerate various Fundamentals Strokes of printing Type
7. Delineate various Finishing Strokes of printing Type
8. How classificationof printing type is made? Explain in detail.
9. What are various factors taken into consideration while choosing any type in design layout?
10. How classification of printing types is being made on the basis of type family? Explain in detail.

3.7 ANSWERS TO CHECK YOUR PROGRESS

1. a) Impression
2. c) Base Line
3. a) X-height
4. c) Shoulder
5. d) Counter
6. b) Face Classification
7. b) Type face
8. a) Kern
9. c) Vertex
10. a) Apex

3.8 REFERENCES / SUGGESTED READINGS

1. http://www.belltype.com

2. Legros& Grant. "Typographical Printing Surfaces." (1916) p. 11.
3. http://www.briarpress.org
4. Elements of Design and Typography : B.D. Mendiratta

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: MR. VIKAS JANGRA
LESSON NO.: 4	VETTER: MR. AROHIT GOYAT
LAYOUT	

STRUCTURE

4.0 LEARNING OBJECTIVES

After reading this lesson, you will be able to:-

- **Understand about the elements of layout.**

4.1 INTRODUCTION

Layout is plan for design which acts as blueprint which involves arrangement of various design elements. Elements for layout during design includes types, colors, graphics and illustration. Headlines and text matter are formed by the types whereas patterns, lines and areas filled with color and tone make graphic shapes. The main purpose of this is to lay them out in a pleasing functional order. Layout is basically the placement of elements.

4.2 ELEMENTS OF LAYOUT

Layout is the arrangement of different printing elements on a layout sheet. After arranging the elements

it is ready for reproduction. The first thing starts with planning a layout which involves choosing elements that can best represent the design. The elements of layout are **body type, display type, illustrations,** and **white space**.

i. **Body Type**: The common element is body type which is the printed type which is used to make up text in a layout. It must be chosen to keeping in view of reflection of the intended message. The text must be clearly legible and must relate to the topic. Typically, anymessage aimed at a contemporary audience would use a modern typeface. The placement of various type requires proper spacing. White space can be just as important as the type itself. Usually, the body type itself is not the focal point of the layout. The text will contain a message that expands upon the other elements. All of the elements, including type, are positioned in a logical progression of importance to meet the layout objectives. The important consideration for body type are:

- Type family
- Style of type
- Size of type font
- Alignment of body text
- Spacing between the lines
- Case style (Lower case, upper case)
- Legibility aspects if any type

ii. **Display Type:** Display type is the type that conveys the main message of the layout. It is intended to create and draw attention. Newspaper and magazine headlines are typical examples of display type. The display line is key to the success of a message. If the display type creates interest, the reader will proceed to the body.The display line in an advertisement leads the reader to other information. After reading the display material, the person must be satisfied or directed to continue reading the text. The style of display type is very important because it must correspond to the visual message. The important consideration for display type are:

- Style must be unique
- Must be placed at optical center
- Creative in nature
- Draw and hold attention
- Good legibility, visibility and readability

iii. **Illustration:** The illustrations in a layout include the ornamentation, photographs, and artwork e.g. line art. Illustrations are most common printed materials. The proverb, “A picture is worth thana million words” depicts a lot without any elaboration. Pictorial images are strong way of conveying a message and have long influence comparatively to text. In some cases, an illustration may convey the message by itself. Illustrations add another dimension to the layout; they can increase

understanding of the product, as well as interest in the product. Hence the choice of illustration in layout must be made very prudently.

iv. **White Space:** White space includes areas of the layout that are void and do not have any printed images. Filling up the entire design space will definitely not produce effective results. The utilization of white space addsvisual quality of a layout. The distance between elements can be very valuable when white space is used according to sound design principles. It provides a brief period for absorbing the printed matter. While leaving the white space it must be ensured that all elements are united together and communicating properly.

4.2.1 PRINCIPLES FOR PLACEMENT OF ELEMENTS

The arrangement of elements in any layout must be made that it is pleasing to the eye and easily communicates the message to reader. The layout artist or designer is responsible for assembling the elements to make a composition. In order to make placement of element at appropriate position and communicate the message effectively, some set of rules to be obeyed known as 'Principles of design'. These are enlisted as below:

i. **Proportion:** It is concerned with size relationships. Both the size of the sheet and the size and placement of the images/elements on the sheet are important to proportion. It is the relationship between the size and the shape. It is a matter of relationship of height, width, depth and surrounding space i.e. all the elements of design are in proportion.

ii. **Balance:** Placement of design elements should put together not only in proportion but in balance also. The balance principle also acts as the principal of gravity. Balance is defined as, "a state of rest due to action of force that counteract each other". Balance refers to equalizing the weight of elements in a design. It is a term that describes the equilibrium and visual weight of a graphic page. There are three types of balance used in designing enlisted as:-

- Formal or Symmetrical Balance
- Informal or Asymmetrical Balance
- Radial Balance

iii. **Rhythm:** It occurs when a design elements is repeated. It acts as a guide so that the eye reads important parts of a message. It is achieved by a way of smooth flow facilitating eye movement. The basic element of rhythm is repetition.

iv. **Harmony**: The design elements of a page should be harmonious. One element should go with another element in terms of tone, shape or design characteristics. Shape harmony refers to the general structure of the elements, which are by nature the same.

v. **Contrast**: The main function of contrast is to create attention in design. The element that need uniqueness require emphasis. Emphasis or contrast adds variety to a design. Some elements of layout stand out because of contrast. Contrast in shape, color, types, typefaces and orientation of objects can be achieved.

vi. **Unity:** It is the proper balance of all elements to get a pleasing effect as a whole. Individual elements of a design must relate to each other. The image is viewed as one piece as a whole and not as separate element. Unity implies the union of all elements in a layout. Individual elements of a design must relate to each other and to the total design, so that they hold together.

4.2.2 CONSIDERATION WHILE PREPARING A LAYOUT

There are a number of factors to consider in developing a layout. Some areas that must be considered by the layout artist which includes:

i. Layout objective
ii. Style and format
iii. Layout requirements
iv. Printing requirements

Each factor contributes to Taking decisions that will influence production of the final product.

i. **Layout Objective:**The layout objective is the main statement that describes the objective or motto or purpose of an identifiable end product. The objective outlines are the main goal of the layout artist. The objective describes what information on the printed page is intended to do. Knowing the purpose helps the layout artist determine which text and illustrations will be best for the job. The message or visual effect delivered by a printed image helps determine how the layout will be planned. Identifying the audience gives direction to the layout artist. Design of the end product/layout also determines the way of communicating message e.g. lighthearted or humorous mood is required, dramatic photograph might can-not help in achieving the desired effect. All of the elements unitedly reflect the message of the end product.

ii. **Style and Format:** Style includes the way the artist is using the elements i.e. text type, display type and illustrations of the design. Type style used in this textbook is quite different from the styles used in advertisements. The designer must choose the elements that communicates the best. One of the primary concern is also deciding how to organize the format.

iii. **Layout Requirements:** The various methods of layout and the schedule to complete the job must be considered while planning any layout. It is to be decided that it will be text dominating, image dominating or both text and image dominating. Decision must be made that whether the layout will be developed as a sketch, a rough, or a comprehensive. It may be necessary to perform all three. A sketch is an idea in pictorial form with little detail. Sketches are often helpful because they provide a picture indicating possible placement of the elements. A rough is more illustrative

of the final product; it provides the style of the type as well as the position of the elements. A comprehensive is the third and final method of layout. It is the presentation of what the finished product will indeed look like. When planning a layout, the artist should decide which methods will be necessary to reach the final product in a timely manner. An estimate of the time it will take to complete the job is essential from a planning standpoint. Most printed pieces are produced to meet a deadline and must be delivered by a specified date. The planner must decide whether the job can be completed in the time allowed.

iv. **Printing Requirements:** The printing process used for the production has a strong influence on how a layout is developed. It is not that every type of printing process is suitable for every printing type job. The printing requirement considers the following aspects to be undertaken:

- Size of the product
- Quantity to be printed
- Paper requirements
- Type of printing requirement
- Color requirement : Mono-color or Multicolor
- Operation requirements
- Financial aspects
- Volume of production
- No of pages in one unit of printed product
- Finishing operations requirements
- Special color printing

4.2.3 TYPES OF LAYOUT

Different layouts are prepared according to different requirements by placement of text, illustrations and suitable images on a given surface area. Broadly layouts can be classified in three different categories:

a. **Text Dominant:**When the layout consists of too much or large text then it is called to be text dominated. In this type of layout the headline is used in large display fonts occupying more area and the desired effect is created.

b. **Image Dominant:**We come across these layouts regularly in newspapers and magazines, where a picture of a celebrity takes center stage or the product is shown in all its glory especially in case of advertisements.

c. **Image and Text:**If the layout is blending of both, image and text, then it is image and text layout. In this type of layout both image and text are used in equal measure and given a balanced exposure.

4.2.4 STAGES OF LAYOUT

From the conceiving of idea in mind to finally produced design, layout passes through various stages

known as ‘Stages of Layout’. In each stage of layout development, different degree of finishing is carried out. Choosing the right method for developing any layout may be very difficult as it requires careful planning by the layout developer/artist. The design methods used in layout are thumbnail sketches, the rough layout, and the comprehensive layout. The size of the job, its objectives and use of color are some important considerations to be taken into consideration. The layout artist must be visionaryabout how to arrive at the final stage. Various stages of layout are:

i. Thumbnail Sketches
ii. Rough Layout
iii. Comprehensive Layout
iv. Artwork (Final Stage)

From the initial stage of thumbnail layout to final stage i.e. artwork, the development process provides different degree of finishing. The detailed procedure is delineated as below:

i. **Thumbnail Sketches:** The very first stage of layoutdevelopment is called ‘Thumbnail Sketches’. This is the planning or infant stage of any layout. If one have good creativity and planning skills, then this stage can be avoided. The details in this stage are not there, only lines are drawn. Advantages of Thumbnail Sketch includes simple, rapidly drawn designs for a layout. In order to draw sketches different approaches can be taken into consideration. Some of the software also offers readymade templates for different jobs. While developing sketches, the size of a thumbnail is not important, sketch drawn is generally smaller than the size of the printed product. The first sketch might not be the design selected, but each one will help the artist visualize the end product. The main objective of the sketch is to evaluate the weight of each design element. The sketch shows the basic shape and tone of the entire layout.

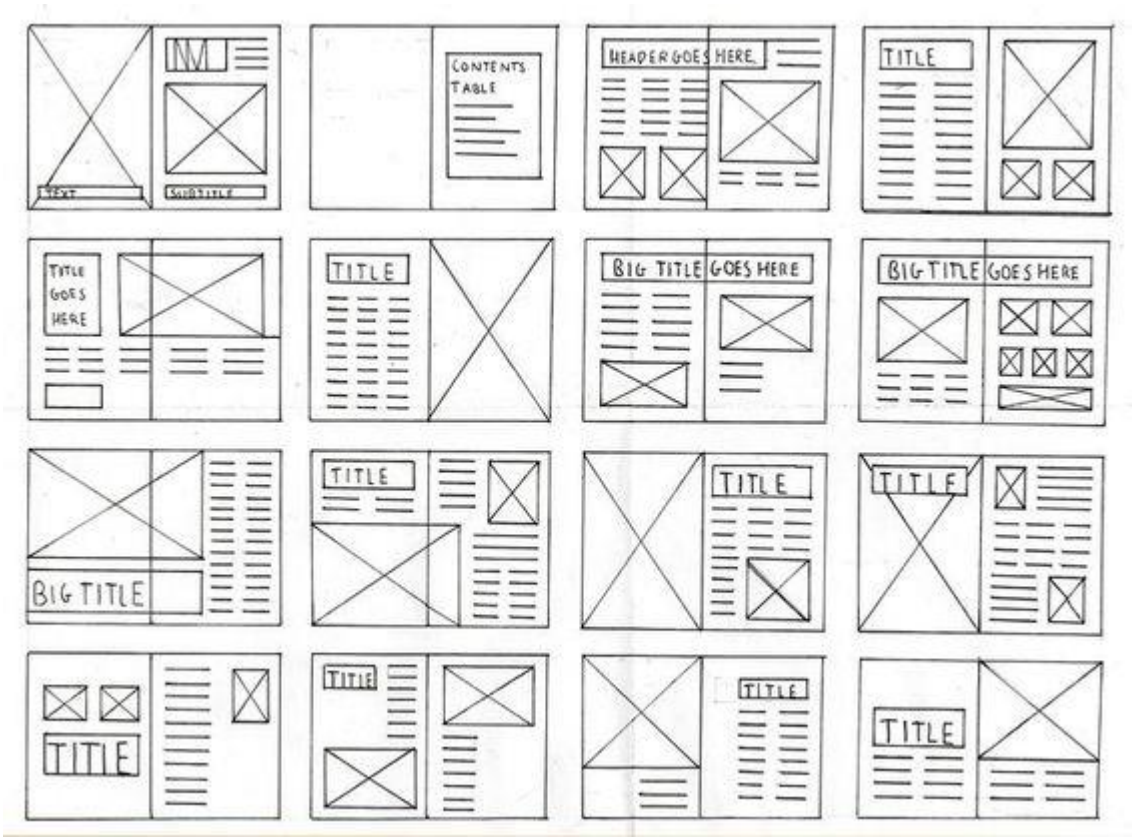


Figure: Thumbnail Sketch

ii. **Rough Layout:** After finalizing a thumbnail layout, the next step is to move towards a rough layout. It is a redrawn version of a thumbnail sketch with more details. The main difference between thumbnail and rough layout is in terms of visual appearance. Rough layout provides more visual details. The elements in a rough layout or dummy offer a truer visual meaning. After finalizing dummy, it must be checked and approved by the client. The display lines and illustrations of a rough layout are similar to the elements of the final product. Although the text material is illegible block or whatever form it will take in the finished product. The rough has a closer resemblance to the intended printed piece than the thumbnail sketches. All detail regarding type size, type style, or color can be made on a tissue overlay or on the layout. Rough layout can be classified broadly in two categories:

- Working Rough
- Finished Rough

Working rough simply serves as a rapid guide to typesetter, photographer and the printer. On the other hand the finished rough look similar to final print. All the elements are clearly and accurately placed in regard to size, style, spacing etc.

Figure: Rough layout

iii. **Comprehensive Layout:** Next stage of layout iscomprehensive layout which shows similar to finished printing. When rough layout is further published then it is called comprehensive layout.In the other words we can say it is close version of artwork stage i.e. final stage of layout. Hence all details becomes important here. Thedisplay type is drawn as it will appear in the finished piece. If any art sketched previously, now has a photograph/accurate line art in its place. Special effects become a part of the comprehensive layout, and colors can also be added. Sometimes refined layout is also prepared before making a comprehensive layout.

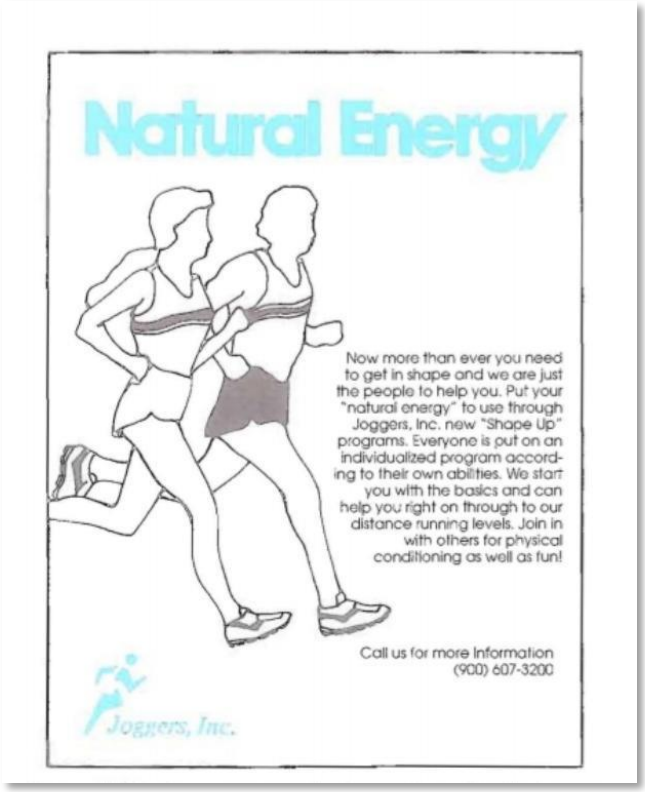


Figure: Comprehensive layout

iv. **Artwork (Final Stage):** The fourth and final stage of layout is known as artwork. Here printer starts printing and this should be handled by a skilled person having sound knowledge about printing. Conventionally it is a black and white image or black image on a white page of a camera-ready copy used by the printer to make a film positive or negative for the purpose of printing. Now a day sophisticated techniques are available in this digital era. Numerous digital options are available depending upon the final requirement and end use.

4.2.5 COLORS FOR LAYOUT DESIGNING

Color plays an important role in our day to day life as they because of emotional attachment. Occasionally we may hear peoples expressing strong likes and dislikes regarding particular colors. The impact of color sensation depends primarily on the frame of our mind. Color psychology describes the perception of human being towards color. It helps in understanding how different people react to any particular color. In this modern era color psychology is widely used for marketing and branding of products. So it became necessary to understand psychology of different color for different layouts.

i. **How Color communicates? :** There is no particular law of color preference but one can go for established beliefs that work up to a certain extent e.g. children prefer bright colors, women prefer deep shades etc. Color preferences are affected by numerous factors and also vary with geographic,

national, cultural, educational and economic factors also. Salient meanings of different colors are expressed as: -

a. **White:** It represents truth, purity, pleasant dreams and neutrality. A white flag is recognized universally as symbol of truth.
b. **Red:** It symbolizes action, danger, fire, passion. Red color is used as warning symbol. It also draws attention and one immediately focus attention on a particular element. So where one need to draw attention red color may be used. In many cultures it represents beauty.
c. **Green**: Green is considered a color of peace and ecology. This is directly related to environment. It provides a feeling of freshness. However in negative aspect it is associated with illness, disgrace, jealousy and poison. Bright green represents fertility. Green is also used to represent safety at global level.
d. **Blue**: It symbolizes seas, clouds productive, interior, skies, peace, unity, harmony, calmness, trust, coolness, confidence, royalty, nobility and the Earth. Blue color is seen trustworthy and dependable. The color of the sky and the ocean is blue.
e. **Pink**: Pink is a romantic color which is generally preferred by women, so all most all product related with female dominates in pink or nearby shade or other lighter shades. It also encourages action and confidence and bright pink stimulates energy. It is the color of happiness. The pink ribbon is an internationally recognized symbol of hope and awareness in the fight against breast cancer.
f. **Yellow**: Yellow is a warm color which shines with optimism and happiness. Shades of golden yellow carry the promise of a positive future. It also symbolizes mentally stimulating, activates memory and encourages communication. If yellow color is observed around the World, many taxi cabs and school buses are yellow in color. In our country, yellow color is associated with farmer.
g. **Orange**: Orange represents knowledge, civilization, and luxury. Orange, a close relative of red, sparks more controversy than any other hue. It also symbolizes stimulated activity, stimulated appetite and encourages socialization.
h. **Black:** This color symbolizes night, evil and death. Black color gives a sense infinite and endless space. Black is authoritative and powerful because of evoking strong emotions too much can be overwhelming. Black color is also known as advertising beauty.
i. **Gray:** The shade of gray color lies between White and Black color. It represents elegance, humility, respect, pessimism, strong emotions and neutrality. In negative connation it is also associated with loss or depression.
j. **Metallic Color:** Gold and silver are the metallic colors. Gold is a rich color which provides the majestic aspects of sun and symbolizes wisdom. Silver stands for purity, test of truth and the moon. It also signifies richness and power. In ancient Hindu culture, it is the color of Fire-God.

ii. **Factors to be considered while selecting Color:** While considering about any layout development, no one can ignore the importance of color because colors are associated with the human emotions, culture and psychology. Color in layout should be selected keeping in view of the following aspects: -

a. Class of people
b. Age Factor
c. Sex
d. Nationality

4.3 CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

CHOOSE THE RIGHT OPTION.

1. The plan for design which acts as blueprint which involves arrangement of various design elements is known as :
   a) Graphics Design
   b) Layout
   c) Design
   d) All the above
2. The common element which is used to make up text in any layout is known as:
   a) Display Type
   b) Type font
   c) Body type
   d) Type family
3. The type that conveys the main message of the layout and is intended to create and draw attention.
   a) Display Type
   b) Type font
   c) Body type
   d) Type family
4. Which of the following/s is not a principle used for layout preparation.
   a) Contrast
   b) Emphasis
   c) Texture
   d) Proximity
5. Which of the followings is/arePrintingrequirements?
   a) Size of the product
   b) Quantity to be printed

c) Paper requirements A-Series

d) All of the above

6. Which of the followings is not a Layout type?

a) Text Dominant

b) Image Dominant

c) Artwork

d) All of these

7. Which of the following is not a type of 'Balance'?

a) Informal Balance

b) Formal Balance

c) Radial

d) Proportion

8. The very first stage of layoutalso called planning stage of any layout and this stage can be avoidedis known as:

a) Thumbnail Sketches

b) Rough Layout

c) Comprehensive Layout

d) Artwork (Final Stage)

9. Radial Balance is a type of which balance

a) Informal Balance

b) Formal Balance

c) May be Both

d) None of these

10. The color which is romantic color which is generally preferred by women. It also encourages action and confidence and its bright shade stimulates energy. This is symbolized by

a) Red Color

b) Blue Color

c) Yellow Color

d) Pink Color

4.4 SUMMARY

- Layoutis the arrangement of different printing elements on a layout sheet. After arranging the elements it is ready for reproduction. The first thing starts with planning a layout which involves choosing elements that can best represent the design.
- The elements of layout are body type, display type, illustrations, and white space.
- The various methods of layout and the schedule to complete the job must be considered while planning any layout. It is to be decided that it will be text dominating, image dominating or both

text and image dominating. Decision must be made that whether the layout will be developed as a sketch, a rough, or a comprehensive.

- From the conceiving of idea in mind to finally produced design, layout passes through various stages known as 'Stages of Layout'. In each stage of layout development, different degree of finishing is carried out. Various stages includes: Thumbnail Sketches, Rough Layout, Comprehensive Layout and Artwork (Final Stage).

4.5 KEYWORDS

Body Type: The common element is body type which is the printed type which is used to make up text in a layout. It must be chosen to keeping in view of reflection of the intended message. The text must be clearly legible and must relate to the topic.

Illustration: The illustrations in a layout include the ornamentation, photographs, and artwork e.g. line art. Illustrations are most common printed materials.

White Space: White space includes areas of the layout that are void and do not have any printed images. Filling up the entire design space will definitely not produce effective results. The utilization of white space adds visual quality of a layout.

Display Type: Display type is the type that conveys the main message of the layout. It is intended to create and draw attention. Newspaper and magazine headlines are typical examples of display type.

Layout Objective: The layout objective is the main statement that describes the objective or motto or purpose of an identifiable end product. The objective outlines are the main goal of the layout artist. The objective describes what information on the printed page is intended to do.

Style and Format: Style includes the way the artist is using the elements i.e. text type, display type and illustrations of the design. Type style used in this textbook is quite different from the styles used in advertisements.

Layout Requirements: The various methods of layout and the schedule to complete the job must be considered while planning any layout. It is to be decided that it will be text dominating, image dominating or both text and image dominating. Decision must be made that whether the layout will be developed as a sketch, a rough, or a comprehensive.

Printing Requirements: The printing process used for the production has a strong influence on how a layout is developed. It is not that every type of printing process is suitable for every printing type job. This includes: Size of the product quantity to be printed, Paper requirements, Type of printing requirement, Color requirement: Mono-color or Multicolor, Operation requirements, Financial aspects etc.

Text Dominant Layout: When the layout consists of too much or large text then it is called to be text dominated. In this type of layout the headline is used in large display fonts occupying more area and the desired effect is created.

Image Dominant Layout: We come across these layouts regularly in newspapers and magazines, where a picture of a celebrity takes center stage or the product is shown in all its glory especially in case of advertisements.

Image and Text Layout: If the layout is blending of both, image and text, then it is image and text layout. In this type of layout both image and text are used in equal measure and given a balanced exposure.

Stages of layout: From the conceiving of idea in mind to finally produced design, layout passes through various stages known as 'Stages of Layout'. In each stage of layout development, different degree of finishing is carried out. Various stages includes: Thumbnail Sketches, Rough Layout, Comprehensive Layout and Artwork (Final Stage).

4.6 SELF-ASSESSMENT TEST

15. Explain various elements of layout.
16. Define various principles for placement of elements.
17. Explain different types of balance used in layout designing.
18. How contrast can be achieved while layout preparation?
19. How proportion plays a vital role in layout preparation?
20. What are the consideration while preparing a layout?
21. Explain layout objective.
22. Explain style and format for layout.
23. To know about layout requirements.
24. Explain various printing requirements.
25. Define different types of layout.
26. Delineate various stages of layout.
27. Howcolor communicates for layout designing?
28. What factors are to be considered while selecting color for layout?

4.7 ANSWERS TO CHECK YOUR PROGRESS

ANSWERS OF CHOOSE THE RIGHT OPTION.

1. b) Layout
2. c) Body type
3. a) Display Type
4. c) Texture
5. d) All of the above
6. c) Artwork
7. d) Proportion
8. a) Thumbnail Sketches

9. b) Formal Balance
10. d) Pink Color

4.8 REFERENCES/SUGGESTED READINGS

1. https://www.pinterest.co.uk
2. Art and Production by N.N. Sarkar
3. Visual Design & DTP By N.Sivaraman, G.Venkateswaran
4. https://www.slideshare.net/Ashbenn/colour-and-tone
5. Design and Layout – Goodheart
6. http://www.belltype.com
7. Legros& Grant. "Typographical Printing Surfaces." (1916) p. 11.
8. http://www.briarpress.org
9. Elements of Design and Typography : B.D. Mendiratta

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: MR. VIKAS JANGRA
LESSON NO.: 5	VETTER: MR. AROHIT GOYAT
COMPOSING METHODS	

STRUCTURE

5.0LEARNING OBJECTIVES

After reading this lesson, you will be able to:

- **DefineHand Composing**
- **Identify theMechanical Composing**
- **Acquaint about Photocomposing**
- **Determine the Development of Photocomposing.**

5.1 INTRODUCTION

This lesson is aimed to discuss composing methods. Composing or typesetting is a technique in which individual letters, characters, numbers are arranged in a meaningful way. In this chapter we will go through different composing methods and how progress were made in composing techniques with the development of technology.

5.2 COMPOSING

Composing is arrangement of individual letters in sequence. In other words, it is the process of assembling characters, figures, symbols, signs and spaces to make words, lines, and paragraphs in the required size and page measures. Composing process is also known as typesetting. It can be done manually or with the help of machine.

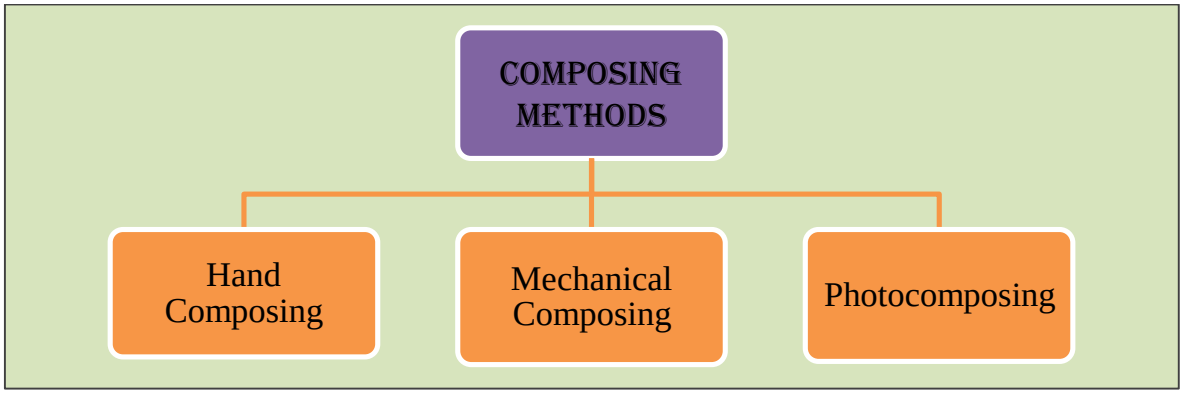


Figure: Composing Methods

6.2.1 HAND COMPOSING

This is the manual process of composing in which the person does this work known as 'compositor'. Thisis the one of the most common and ancient method which was used for composing. This is a slow process of composing but it is ideal for composing of letterhead, visiting cards, bill books, invitation cards. Since the whole process is manual, its speed and accuracy depend upon the efficiency of the compositor.

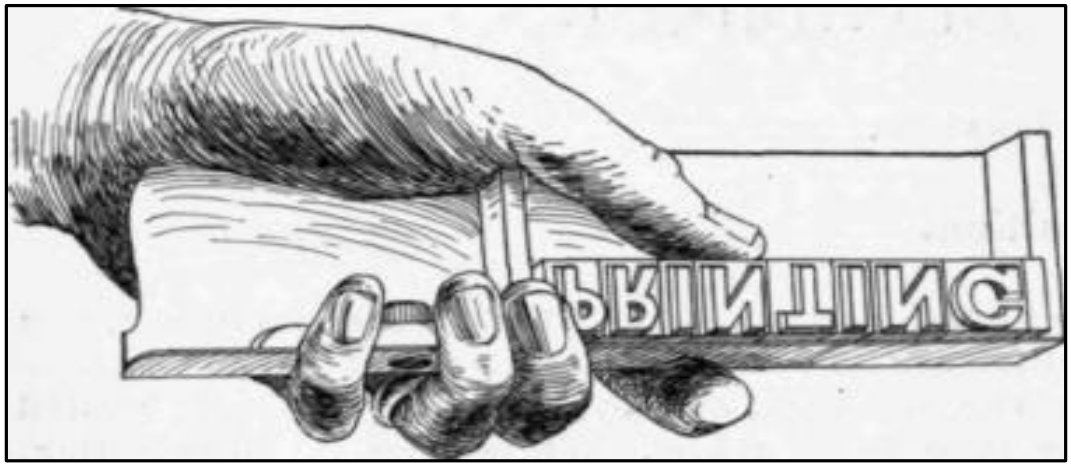


Figure: Printers Composing Stick

Some of the important aspects taken into consideration while hand composing are enlisted as below:

- **Setting the Measurement aspects:**First of all composing stick is held in the left hand and it is adjusted to a required measure while composing manually. This is known as setting of measure. The setting of measure is it generally made in terms of pica ems (a point measurement system).
- **Composing and Justifying**: In order to compose any manuscript the types are pick up one by one by right hand from the respective case of required type size and then these type are assembled in composite stick to form words in accordance with the manuscript which is to be printed. Also it must be keep in mind that the types are placed in the composing stick having type face on topside and nick facing upward. Sufficient pressure with right hand is applied while composing. In addition to this, while composing the correct placement of every type must be ensured in order to avoid falling of the composed matter. Space must be given between the two worlds. Sometimes space is decreased in order to accommodate the some character/s of last word in line and on the other hand space between the words is uniformly increased when any space is remaining at the end of the line. This increasing and decreasing of the space between wordsis made to complete a line and known as 'justification'.
- **Distribution of types:** In the composing department, composed matter are classified in three different categories namely:
  i. **Live Matter:** Proofingof composed matter is made and ready for printing after making corrections.
  ii. **Standing Matter:**That composed matter which has been printed but not destroyed because it may be re-used for printing.
  iii. **Dead Matter:**This is that composed matter which has been printed and it is expected that it will not be reused and ready for distributed in the type cases.

  Hence distribution is the process of separating all the materials used while composing and putting back to its respective place so that it can be reused while composing other manuscript. Such type are reused again and again while composing used for printing. While distributing the matter it should be placed its respective place and cleaned properly. If it is not distributed properly, then it will create numerous problems while composing process.

6.2.2 MECHANICAL COMPOSING

When composing process is made with the help of machines then it is called Mechanical composing. Basically there are two types of mechanical composing process which includes Linotype and Monotype. In case of hand composing readymade types are available in the type case, compositor select one by one in accordance with manuscript to be printed. But in case of mechanical composing each job is composed and casted by using hot molten metal from fresh point for printing. It have both to offer speed and accuracy as well.

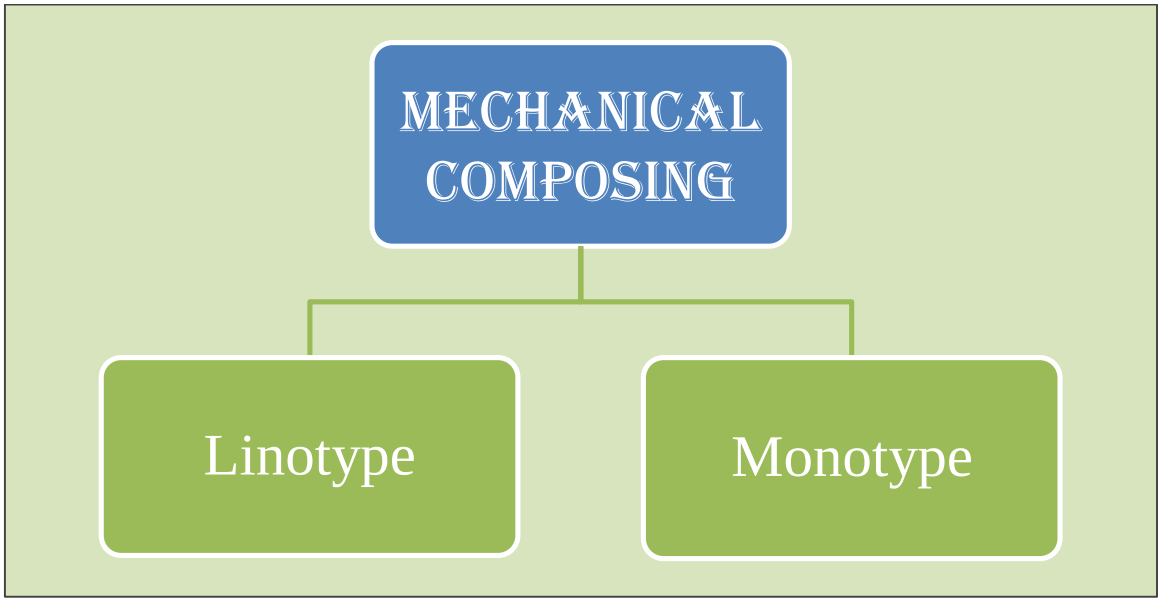


Figure: Mechanical Composing Method

Because these types of composing is casted by using hot molten metal, hence also known as 'hot composing methods'.

i. **Linotype:** Linotype system was designed in 1886 by OttmarMargenthaler. This was the first mechanical typesetting method. It is known as linotype because the output of the machine is a composed line of types as one unit in metal. This metal unit is casted one by one and then assembled in a galley tray of the machine. Linotype machine offers the main feature that the keyboard and caster are combined together. The line produced by the machine is called 'slug'. A line composing machine has four units which have their different functions to perform

   - **Magazine:**Its main function is to house the matrices. One magazine contains matrices of complete font of same size. Therefore number of magazine varies machine to machine.
   - **Keyboard:** The linotype keyboard comprises of 90 keys. These keys were equally divided into 3 groupscontaining Upper case, Lower case and special characters. Pressing a key to release the matrices from the magazine.
   - **Castingmechanism:** Molten metal is poured in mold so that the slug can be casted.
   - **Distribution of matrices:** After slug formation respective matrices and spaces to be placed at their respective places.

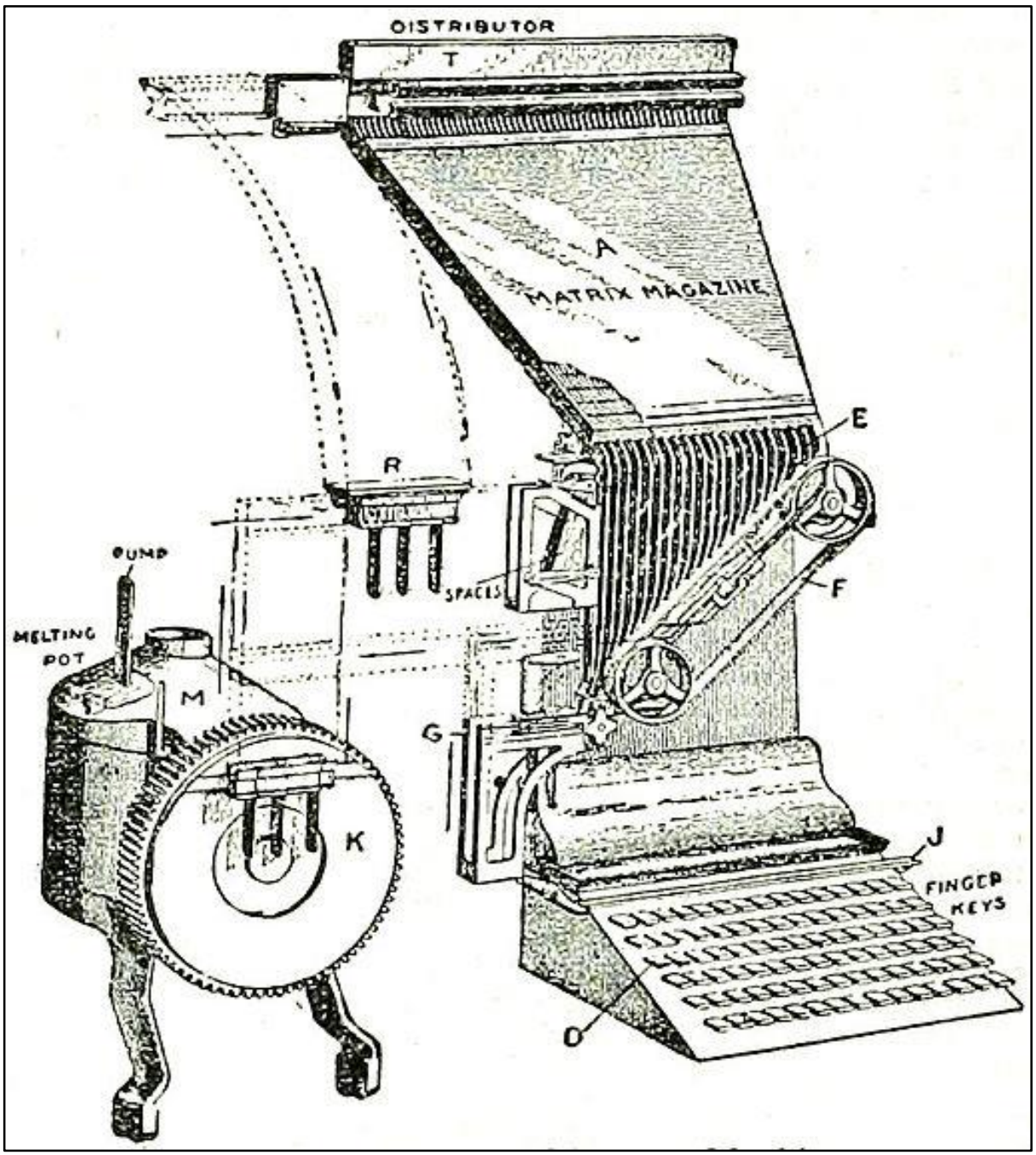


Figure: Linotype Machine

Linotype Machine Mechanism: Each and every manipulation of the key buttons of the keyboard activates a cam which releases the particular matrices from the magazine. The released matrices fall from the magazine to a conveyer belt. This conveyor belt carries them into the assembly boxserving as a composing stick. After completing each word, the operator presses the space band bar causing a wedge shaped space band to fall after the word. After completion of a line of matrices and the space bands has been assembled tojustifythe line in the correct measure. This is done by activating the justifying layer. This also brings the justified line before the mold of the machine. Hot molten metal is then forced into the matricesproduce a complete line of type on solidification. This formed complete line of type is called

a slug.The slug is trimmed to the proper thickness and type height before being dropped into the galley tray. After casting, the matrices are returned to the magazine in their proper channels and space bands to the space band box.

Advantages of Linotype

a. While composing leading can easily be achieved.
b. Slugs can easily be handled rather than individual types.
c. Easy to justify while as it is automatic.
d. Speed on keyboard is fast as comparison compose types manually.
e. Once slugs can be used, then these can be simply re-melted and hence fresh casting can be made.
f. Each line offer a good printing surface.

Disadvantages of Linotype

a. For different fonts, a separate magazine is required.
b. Difficult to combine two different type faces.
c. Model of the machine decides and restricts.
d. In order to correct even a single minor change, it requires re-setting/recasting of the entire line.
e. Composition of tabular matter is difficult and time consuming.
f. Heat and fumes are produced from molten metal which causes difficulty for operator to work for longer period.

ii. Ludlow: This is a semi-automatic composing system in which matrices are assembled by hand and then cast in the machine. This was basically used for newspaper heading composing and casting system. Ludlow matrices are bigger in size and are stored in cases. Hand composing is used to assemble these in a stick. Then casting device of the machine casts a slug as in linotype. This method is suitable for setting display matters, where only a few words and a line is to be composed.

iii. Monotype: Monotype system was inventedby Tolbert Lanstonin 1889. This is another popular mechanical composing method which is also known as ‘single letter composing machine’. In this each character is composed separately from hot metal and then delivered in galley in the form of justified composed line. It consists of two machines operated by two separate person. These can be installed at two different places also. These two machines are:-

1. Keyboard: Thekeyboard of monotypecomposing systemproduces a punched spool paper to run the caster. Its working is based on the air pressure supplied using a compressor. This keyboard consists of :-

- Pair of keys
- Paper roll with a series of metal punches used for making holes in paper ribbon.
- Counting and justification mechanism assembly.

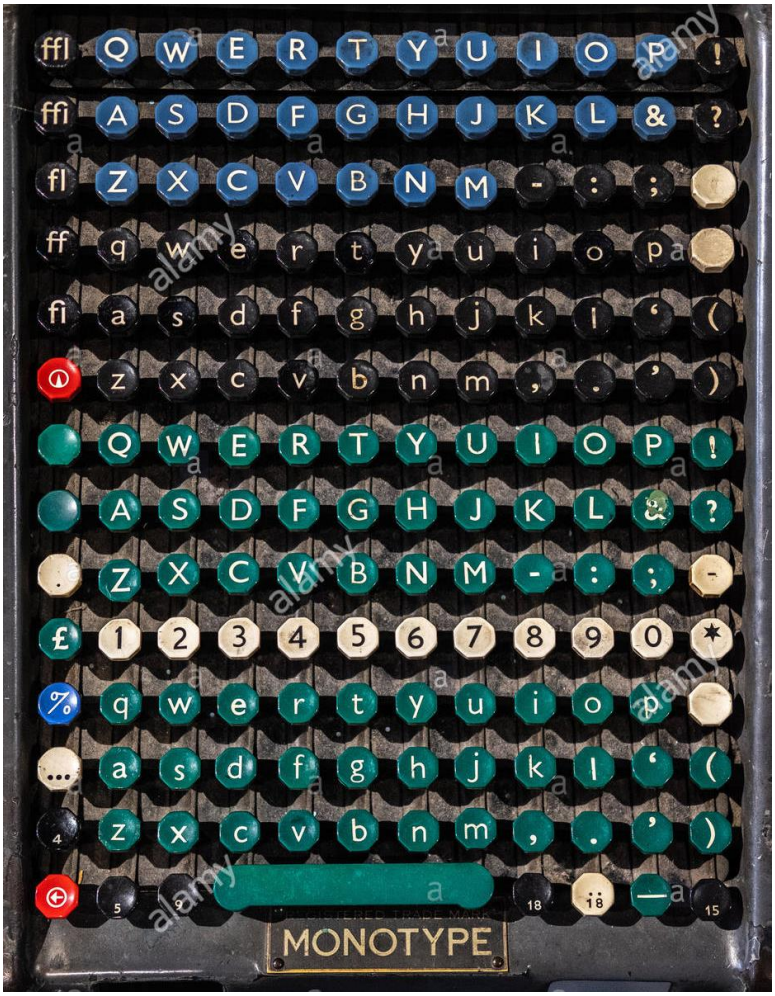


Figure: Monotype Keyboard

Monotype keyboard consists of the characters similar to standard keyboard. It consists of different colors key buttons which indicates different characters of a type font. Depression of key makes hole coded to each character in the paper ribbon. Sometimes there is Monotype Duplex Keyboard which consists of two paper roll and punch two spools at a time.

2. **Caster:**It is called monotype, because monotype casts single characters rather than a complete line of types. The keyboard of monotype is similar to that of a typewriter. As an operator depresses the keys on the keyboard, representing the characters, holes are punched automatically in a paper roll, called spool paper, fixed at the top of the machine. Thus the entire manuscript is codified on the spool paper. The justification and hyphenation is done by the keyboard commands.

   After completion of the keyboard operation, the spool paper is fixed on the monotype caster, which decodes the perforations of the spool paper. A matrix case, consisting of type moulds, is activated by the punched holes of the spool paper. When the right character matrix is over the mould, molten metal is injected and a metal type of the character is cast. As each character is cast, it is pushed into position until a full line is formed. After each line has been cast, it is pushed into the galley tray of the machine and the next line is then cast.

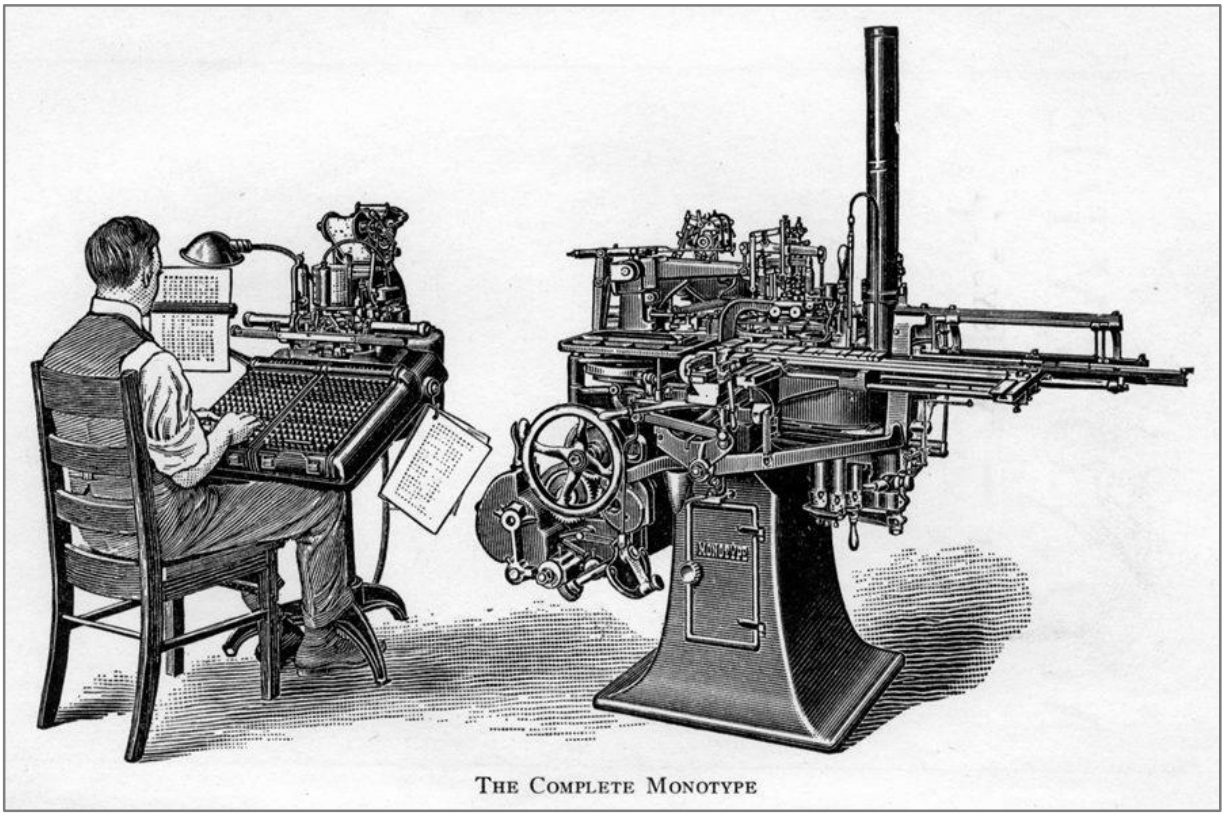


Figure: Monotype Composing Machine

Advantages of Monotype

1. It is well adapted to simple as well as tabular matter.
2. It offers more precision in spacing between words.
3. It is less costly for a complicated composition.
4. Carrying out corrections in the types composed on this is simpler than line composition, because casting here is done not by lines but individually, character by character.
5. This is useful where several scientific and mathematical symbols are to be used.
6. The casting speed of the machine is very fast - 150 characters per minute.
7. Punched rolls can also be stored for recasting later.
8. Keyboarding and casting can be done independently of each other.

Disadvantages of Monotype

1. It requires two operators with expertise to operate either the keyboard or the caster.
2. The caster makes such a deafening noise.
3. The page make-up of mono-composed mater is rather time consuming.
4. After perforation, the entered copy cannot be read unless and until it is cast into types.
5. The composed matter is easily displaced, because it consists of several single characters.
6. Comparatively more metal is required for casting type of a bigger size.

5.2.3 PHOTOCOMPOSING

This is one of the latest development in the typesetting industry which provides a fast, flexible, enviro-friendly and relatively inexpensive method of setting types by using photo-sensitive film or paper.

Increased cost of mechanical composing made hot metal composing very expensive for the printers. Then, Photocomposing came into scenario as an alternative offering numerous advantages over mechanical composing. The photo-sensitive medium (film or paper) can be directly used for preparation of offset image carriers, gravure cylinders and duplication plates for letterpress printing. This is the process of getting type impression on a light sensitive medium (photo-sensitive film or paper) by exposing light through any transparency as we use in photography process.

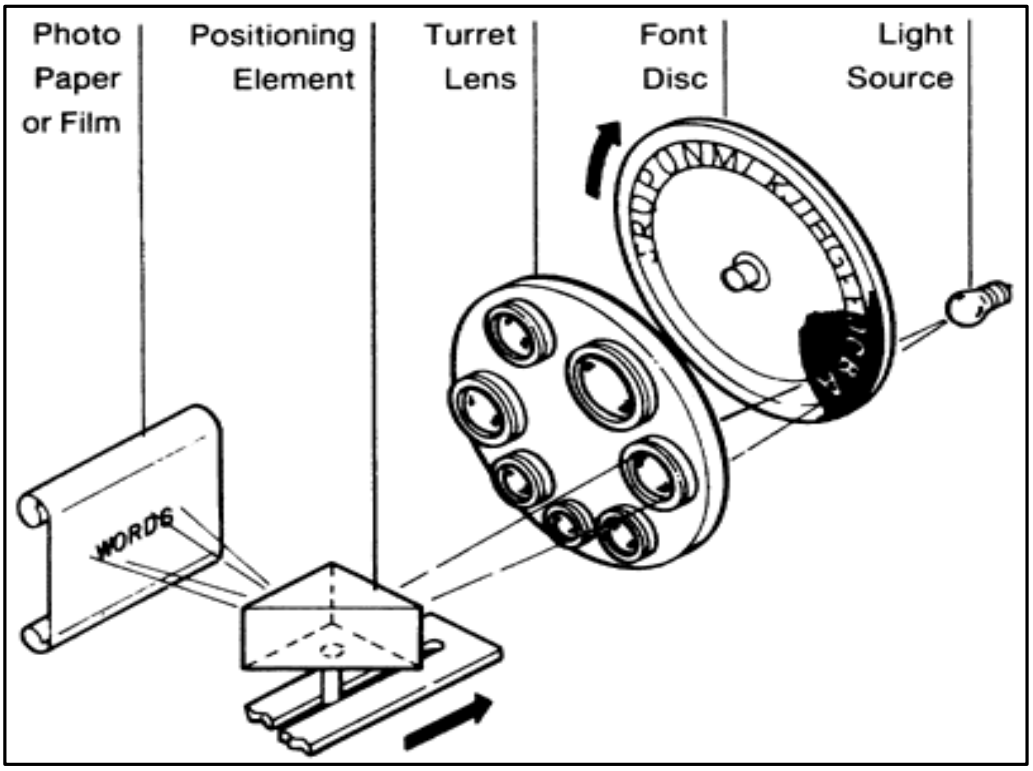


Figure: Science of Photocomposing

Components of Photocomposing Machine

A photocomposing machine consists of three units namely Keyboard, Computer and Photo exposing unit.

1. **Keyboard:** This is input unit of photocomposing machine and resembleslikea typewriter keyboard. This keyboard consists of some additional keys for feeding important information like type size, type face, spacing etc. After composing the manuscript it produces either a perforated tape or magnetic disc which is used for other units. Some photocomposing machine have arrangement that it can produce hard copy for proofing purpose after manuscript is composed. Some keyboard facilitates visual display for operator by using the same proofing can be done.

2. **Computer:** It is compact system and have storage capacity. The main task of computer in photocomposing is for justification purpose. Computer reads an unjustified composed matter and make it justified accordingly by increasing or decreasing space. This setting is based on the way the computer is instructed already stored in it.

Figure: Computer

3. **Photo Exposing:** Thisunit is combination of various components where photographic types are actually set for composing purpose. It basically uses a set type fonts in the form of film strip, grid or disc. This set of type font consists of master negatives of all characters, symbols, figures etc. for type setting purposes. In phototypesetting, a high intensity beam of light is projected on the photosensitive film/paper through master negative. An arrangement is made in such a way that either of master negative or light source moves/rotates and other remains stationary. In this unit, lens are also incorporated in order to set the size of types as per requirements.

Figure: Grid Photographic font

Development of Photocomposing Machine

The development of Photocomposing took place in various phases which are enlisted as below:

i. **Modification in Hot Metal Composing Machines:** In these machine the casting mechanism was replaced by camera to expose photographic film/paper. Brass matrices were replaced by negatives of different type font, symbols and charactersin die-case.
ii. **Electromechanical Devices:** Involvement of electromechanical devices increased the accuracy, speed and efficiency of photocomposing machine and hence reducing overall cost of production.
iii. **CRT Technology:** CRTstands forCathode Ray Tube. The photosensitive materials was exposed using lens from the flash characters on the screen of CRT. It is really a sophisticated technology offers high speed.
iv. **LASER Technology:** LASERacronym for 'Light amplification by Stimulated emission of Radiations'. This is one of the fastest technique used in the world today. Using this technique, it is possible to project focused light on the photosensitive materials produces sharp image of character. Even low sensitive films/materials can easily be exposed using this technology.

Advantages of Photocomposing

Photocomposing has a lot to offerover conventional hot metal composing typesetting which are enlisted as below: -

i. Fast speed of composing as comparison toconventional hot metal composing.
ii. Composing of mixed type font i.e. two or more than two types together is easy without any difficulty.
iii. The size of type font can be set and changed easily even during composition.
iv. CRT equipped machine help the compositor to see type manuscript on the screen.
v. Typed manuscript can be stored on system and easily used for further reference.
vi. After proofing correction, editing and re-arrangement of types can be made easily. Spelling check can easily be made.
vii. Maintaining space between words and letters is easy.
viii. Even leading or spacing between lines can be modifies up to a fraction of a point.
ix. By using suitable commands size, spacing, justification, leading etc. can be easily achieved as per requirement.
x. Operating input and output device are easy for compositor.
xi. Output is in the form of negative or positive on bromide paper/film.

Disadvantages of Photocomposing

i. Initial set up is costly.
ii. Marks visible on the plates are printed on substrate.

iii. This infrastructure requires air conditioning and dust free environment for efficient working.

5.3 CHECK YOUR PROGRESS

1. Which of the following is a technique in which individual letters, characters, numbers are arranged in a meaningful way.
   a) Composing
   b) Typesetting
   c) Printing
   d) Both ‘a’ and ‘b’
2. Which of the following is one of the ancient method of composing?
   a) Hand Composing
   b) Photocomposing
   c) Mechanical Composing
   d) Ludlow
3. That composed matter which has been printed but not destroyed because it may be re-used for printing is known as:
   a) Live Matter
   b) Standing Matter
   c) Dead Matter
   d) Distribution
4. Linotype system was designed in 1886
   a) John Guttenberg
   b) AloisSenefelder
   c) Tolbert Lanston
   d) OttmarMargenthaler
5. Which one of the following uses a photosensitive film or paper material for composition purpose?
   a) Hand Composing
   b) Photocomposing
   c) Mechanical Composing
   d) Ludlow
6. A complete line produced by hot-melt mechanical composing method is known as:
   a) Composed Matter
   b) Caster
   c) Heading
   d) Slug

7. That composed matter which has been printed and is expected that it will not be reused and ready for distributed in the type cases is called:
   a) Distribution
   b) Live Matter
   c) Standing Matter
   d) Dead Matter
8. Monotype system was designed in 1889
   a) John Guttenberg
   b) AloisSenefelder
   c) Tolbert Lanston
   d) OttmarMargenthaler
9. Sometimes space is decreased or increased while composing a line for the purpose of convenience i.e. made to complete a line which is known as:
   a) Alignment
   b) Line setting
   c) Line composing
   d) Justification
10. CRT technique is used in which of the following composing method:
   a) Hand Composing
   b) Photocomposing
   c) Mechanical Composing
   d) None of the above

5.4 SUMMARY

- Composing/ Typesetting is arrangement of individual letters in sequence. In other words, it is the process of assembling characters, figures, symbols, signs and spaces to make words, lines, and paragraphs in the required size and page measures.
- Hand composing is the manual process of composing in which the person does this work known as 'compositor'. This is the one of the most common and ancient method which was used for composing.
- Mechanical Composing process is made with the help of machines then it is called Mechanical composing which includes Linotype and Monotype based on 'hot metal composing'.
- Linotype was designed in 1886 by OttmarMargenthaler and was the first mechanical typesetting method. It is known as linotype because the output of the machine is a composed line of types as one unit in metal. It have four units namely magazine, keyboard, casting mechanism and distribution of matrices.

- Monotype system was invented by Tolbert Lanston in 1889 and is another popular mechanical composing method which is also known as 'single letter composing machine'. This machine consists of two parts keyboard and caster.

5.5 KEYWORDS

Justification: Sometimes space is decreased in order to accommodate the some character/s of last word in line and on the other hand space between the words is uniformly increased when any space is remaining at the end of the line. This increasing and decreasing of the space between words is made to complete a line and known as 'justification'.

Live Matter: Proofingof composed matter is made and ready for printing after making corrections.

Standing Matter: That composed matter which has been printed but not destroyed because it may be re-used for printing.

Dead Matter: This is that composed matter which has been printed and it is expected that it will not be reused and ready for distributed in the type cases.

Slug: The line produced by the machine is called 'slug'.

Casting mechanism: Molten metal is poured in mold so that the slug can be casted.

Ludlow: This is a semi-automatic composing system in which matrices are assembled by hand and then cast in the machine. This was basically used for newspaper heading composing and casting system.

Keyboard: The keyboard comprises of different keys. These keys were equally divided into 3 groups containing Upper case, Lower case and special characters. Pressing a key to release the matrices from the magazine. It is used in both linotype and monotype mechanical composing method.

Photocomposing Method: The photo-sensitive medium (film or paper) is used directly used for preparation of image carriers for printing process. This is the process of getting type impression on a light sensitive medium i.e. photo-sensitive film or paper by exposing light through any transparency.

LASER Technology: LASERacronym for 'Light amplification by Stimulated emission of Radiations'. This is one of the fastest technique used in the world today. Using this technique, it is possible to project focused light on the photosensitive materials produces sharp image of character.

5.6 SELF-ASSESSMENT TEST

29. Define Typesetting.
30. Explain classification of typesetting methods.
31. What do you mean by Hand Composing? Explain in detail.
32. What are important aspects taken into consideration while hand composing?
33. What do you mean by Composing and Justifying? Explain its importance.
34. Define distribution of types. How it is classified?
35. Define Mechanical composing.
36. Differentiate between Hand Composing and Mechanical composing.
37. Explain Linotype composing in detail.

38. Enlist pros and cons (advantages and disadvantages) of Linotype composing.
39. Explain Monotype process in detail.
40. Explain the importance of Keyboard in Linotype and Monotype composing.
41. Enlist advantages and disadvantages of Monotype composing.
42. Differentiate between Linotype and Monotype composing.
43. Define Ludlow and its utility.
44. Define photocomposing. Enumerate various components of Photocomposing.
45. Enlist comparison between Hand Composing, Mechanical composing and Photocomposing.
46. How development of Photocomposing was occurred? Explain it.

5.7 ANSWERS TO CHECK YOUR PROGRESS

1. d) Both 'a' and 'b'
2. a) Hand Composing
3. b) Standing Matter
4. d) OttmarMargenthaler
5. b) Photocomposing
6. d) Slug
7. d) Dead Matter
8. c) Tolbert Lanston
9. d) Justification
10. b) Photocomposing

5.8 REFERENCES / SUGGESTED READINGS

1. Typography Practices by B. D. Mendiratta
2. https://historyzine.com
3. https://commons.wikimedia.org
4. https://letterpresscommons.com/
5. https://www.alamy.com/old-monotype-keyboard
6. https://99designs.com/blog/design-history-movements/history-of-digital-fonts/
7. https://www.behance.net/gallery/27099543/BB-Perfume-Typeface
8. www.dreamstime.com

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: MR. ABHISHEK SAINI
LESSON NO.: 6	VETTER: MR. AROHIT GOYAT
DESKTOP PUBLISHING	

STRUCTURE

9.1 LEARNING OBJECTIVES

After going through this lesson, you will be able to:

- **9.1.1 Understand the desktop publishing environment.**
- **9.1.2 Understand the hardware and software support required for DTP.**
- **9.1.3 Look at some specific characteristics of commonly used DTP software.**
- **9.1.4 Elaborate the importance of Desktop Publishing.**
- **9.1.5 List the strength and limitations of Desktop Publishing System.**
- **9.1.6 Know about where is DTP used?**

9.2 INTRODUCTION

Desktop publishing is the use of the computer and software to create visual displays of ideas and information. Desktop publishing documents may be for desktop or commercial printing or electronic

distribution, including PDF, slideshows, email newsletters, electronic books, and the Web.Desktop publishing is a term coined after the development of a specific type of software. It's about using that software to combine and rearrange text and images and creating digital files for print, online viewing, or websites. Before the invention of desktop publishing software, the tasks involved in desktop publishing were done manually by people who specialized in graphic design, typesetting, and prepress tasks.

9.3 DESKTOP PUBLISHING

Desktop publishing was first developed at Xerox PARC in the 1970s. A contradictory claim states that desktop publishing began in 1983 with a program developed by James Davise at a community newspaper in Philadelphia. The program Type Processor One ran on a PC using a graphics card for a WYSIWYG (what you see is what you get) display and was offered commercially by Best info in 1984. Desktop typesetting with only limited page makeup facilities had arrived in 1978–1979 with the introduction of TeX, and was extended in 1985 with the introduction of LaTeX.

The Macintosh computer platform was introduced by Apple with much fanfare in 1984, but at the beginning, the Mac initially lacked DTP capabilities. The desktop publishing market took off in 1985 with the introduction in January of the Apple LaserWriter printer. This momentum was kept up by with the addition of PageMaker software from Aldus, which rapidly became the standard software application for desktop publishing. With its advanced layout features, PageMaker immediately relegated word processors like Microsoft Word to the composition and editing of purely textual documents. The term "desktop publishing" is attributed to Aldus founder Paul Brainerd, who sought a marketing catchphrase to describe the small size and relative affordability of this suite of products, in contrast to the expensive commercial phototypesetting equipment of the day.

Before the advent of desktop publishing, the only option available to most people for producing typed documents (as opposed to handwritten documents) was a typewriter, which offered only a handful of typefaces (usually fixed-width) and one or two font sizes. Indeed, one popular desktop publishing book was entitled The Mac is not a typewriter, and it had to actually explain how a Mac could do so much more than a typewriter. The ability to create WYSIWYG page layouts on screen and then print pages containing text and graphical elements at crisp 300 dpi resolution was revolutionary for both the typesetting industry and the personal computer industry at the time; newspapers and other print publications made the move

to DTP-based programs from older layout systems such as Atex and other programs in the early 1980s.

Desktop publishing was still in its embryonic stage in the early 1980s. Users of the PageMaker-LaserWriter-Macintosh 512K system endured frequent software crashes, cramped display on the Mac's tiny 512 x 342 1-bit monochrome screen, the inability to control letter-spacing, kerning, and other typographic features, and the discrepancies between screen display and printed output. However, it was a revolutionary combination at the time, and was received with considerable acclaim.

Behind-the-scenes technologies developed by Adobe Systems set the foundation for professional desktop publishing applications. The LaserWriter and LaserWriter Plus printers included high quality, scalable Adobe PostScript fonts built into their ROM memory. The LaserWriter's PostScript capability allowed publication designers to proof files on a local printer, then print the same file at DTP service bureaus using optical resolution 600+ ppi PostScript printers such as those from Linotronic.

Later, the Macintosh II was released, which was considerably more suitable for desktop publishing due to its greater expandability, support for large color multi-monitor displays, and its SCSI storage interface (which allowed fast high-capacity hard drives to be attached to the system). Macintosh-based systems continued to dominate the market into 1986, when the GEM-based Ventura Publisher was introduced for MS-DOS computers. PageMaker's pasteboard metaphor closely simulated the process of creating layouts manually, but Ventura Publisher automated the layout process through its use of tags and style sheets and automatically generated indices and other body matter. This made it particularly suitable for the creation manuals and other long-format documents.

Desktop publishing moved into the home market in 1986 with Professional Page for the Amiga, Publishing Partner (now PageStream) for the Atari ST, GST's Timeworks Publisher on the PC and Atari ST, and Calamus for the Atari TT030. Software was published even for 8-bit computers like the Apple II and Commodore 64: Home Publisher, The Newsroom, and geoPublish. During its early years, desktop publishing acquired a bad reputation as a result of untrained users who created poorly organized, unprofessional-looking "ransom note effect" layouts; similar criticism was levelled again against early World Wide Web publishers a decade later. However, some desktop publishers who mastered the programs were able to achieve highly professional results.

Desktop publishing skills were considered of primary importance in career advancement in the 1980s, but increased accessibility to more user-friendly DTP software has made DTP a secondary skill to art direction, graphic design, multimedia development, marketing communications, and administrative careers. The discipline of DTP skills range from technical skills such as prepress production and programming, to creative skills such as communication design and graphic image development.

As of 2014, Apple computers remain dominant in publishing, even as the most popular software has changed from QuarkXPress – an estimated 95% market share in the 1990s — to Adobe InDesign.

Of all the technological miracles during the past 75 years, advances in desktop publishing (DTP) represent some of the most impressive developments — from manual typewriters to memory-card typewriters, dot-matrix printers, stacked-feed paper, high-speed laser printers, the Internet, desktop scanners, digital cameras and beyond. Home computers now possess the data processing capabilities that previously required an entire room of bulky computers. Since the days of manual typesetting, graphic design and prepress tasks are really not that far behind us, Artwork Abode wants to pause and take a brief look backward in time with a history of desktop publishing timeline.

i. **Page Layouts in the middle Ages:** The work process involved in page design during the middle Ages bears some remarkable similarities to modern page layouts — starting with overall page design, proceeding to decorative borders and then adding text content along with images. A sophisticated division of labor involving rubricators (to fill in red text), illustrators (predecessors of graphic designers), scribes (writers) and artists was common.
ii. **Progress to Fine Typesetting:** Gutenberg's movable type press during the 1450s was the beginning of "volume publishing" — the Bible was ultimately the first major book printed with a movable type process. While initial publication of the Bible only represented an estimated 175 copies or so, Gutenberg's press is still viewed as one of the biggest publishing achievements during any era before or since. Even before Neil Armstrong went to the moon, Gutenberg truly made one giant leap for mankind and womankind.
iii. **Publishing in the Typewriter Era:** As recently as the 1960s and 1970s, "copy and paste" was not yet a reality. Writers, publishers and printers were still engaged in a predominantly manual process that involved physically designing each page one at a time. Carbon paper was still relied upon by writers and typists to maintain a flimsy copy; correction tape and liquid paper was still used to fix typing errors along the way. Even with the initial transition from manual to electric typewriters, it seemed that little had really changed since the days of Gutenberg's invention and publishing breakthrough.

iv. **The Dawn of Desktop Publishing:** The 1980s began the next big steps forward in the history of desktop publishing. IBM's Personal Computer was launched and the day of PCs was born. Soon afterward, the Apple Lisa and LaserWriter were given a push forward by the advent of DTP software breakthroughs — in particular, Aldus PageMaker. Impressive documents could now be designed and published by individuals using off-the-shelf software and a standard computer. The desktop publishing software was eventually joined by Illustrator and other drawing programs. Bigger screens and faster networking contributed much of the momentum needed to make the Internet a new part of daily communication and publishing.

v. **The Expanding Scope of DTP:** The earliest days of desktop published revolved primarily around the print process. The DTP revolution led to an evolutionary transition that now involves many forms of publishing other than paper printing — websites, blogs, PDF files, smartphones, tablets and e-books are six leading contemporary examples of DTP-impacted products.

vi. **The Present and Future of Desktop Publishing:**At one time, only professional graphic designers used desktop publishing software. Then along came consumer-level desktop publishing software and an explosion of people who did desktop publishing for fun and profit, with or without a background in traditional design. Today, desktop publishing is still a career choice for some, but it is also increasingly a required skill for a wide range of jobs and careers.We now have labor and time-saving machines and software to help us complete desktop publishing functions — however, one unavoidable trade-off is that the "DTP process" has become more complex with each new iteration. Individuals and businesses that do not regularly "keep up" with the latest desktop publishing trends can quickly fall behind their customers and competitors. Mastery of DTP often requires constant training and relearning of menu systems and procedures that are baffling and not at all intuitive to "non-geeks."

6.2.1 HOW DESKTOP PUBLISHING HAS CHANGED

In the '80s and '90s, desktop publishing was for print almost exclusively. Today, desktop publishing includes much more than just print publications. It's publishing as PDF or an e-book. It's publishing to blogs and designing websites. It's designing content for multiple platforms, including smartphones and tablets. Desktop publishing is the technical assembly of digital files in the proper format for printing or for electronic distribution. In practical use, much of the graphic design process is also accomplished using desktop publishing, graphics software, and web design software and is sometimes included in the definition of desktop publishing.

Comparison of desktop publishing, graphic design, and web design:

- **Desktop publishing** is the process of using the computer and specific types of software to combine text and graphics to produce documents such as newsletters, brochures, books, and web pages.
- **Graphic design** uses text and graphics to communicate an effective message in the design of logos, graphics, brochures, newsletters, posters, signs, and other types of visual communication.
- **Web design** is a spin-off of graphic design and desktop publishing that focuses exclusively on visual communications for display on websites and mobile devices – to include text, graphics, sound, animation, and video.

6.2.2 TECHNOLOGY OF DESKTOP PUBLISHING

Desktop Publishing (DTP) relies on two primary hardware components: 1) a computer, supplemented by various input devices including scanners and cameras, and 2) a printer that can produce high quality typographical and pictorial output. The process of on-screen DTP page composition is made possible by WYSIWYG (what you see is what you get) page layout software for personal computer use, and page description languages, programming that bridges the gap between the page layout software and the printers that produce pages that match what the user sees on the computer screen.

i. **The DTP Computer:** The two key technological features of a DTP computer are an inexpensive personal computer with a Graphical User Interface (GUI) based on windows, icons, menus, and point-and-click actions, and WYSIWYG page layout software.

The personal computer is at the heart of the DTP process. The development of inexpensive, powerful Macintosh computers with easy-to-use graphical user interfaces, based on windows, icons, menus, and pointing (WIMP) provided the driving force behind the development and rapid implementation of DTP applications throughout the 1980s. The key feature of this technology was the graphics (bit-mapped) display that allowed a user to manipulate text and graphics on an electronic page, using a combination of the mouse and the keyboard as input tools, and to see an accurate representation of the page on the computer screen as the layout work progressed.

ii. **WYSIWYG Software:** Composing text on a page has always been a complicated process. Computer software, running on mainframe computers, made this somewhat easier, but early programs did not provide for the use of variable width type, specialized formatting, or artwork, or the ability for the user to see a reasonable image of what the page would look like when printed. As specialized systems for publishing were developed, these concerns were addressed, but the programs were complicated to use, requiring mastery of complex formatting instruction language. In addition, the specialized machines were expensive and beyond the means of any but the largest printing enterprises.

Word processing software running on personal computers in the early 1980s was easier to use, and provided some previewing capabilities, but it did not have the functionality required for typesetting and, without the availability of bit-mapped screens, it could not represent typefaces, exact placement, or art work.

Before long, however, word processors were able to compose variable typefaces and take advantage of emerging powerful graphical user interfaces for previewing and manipulating page layout. The first commercially significant software application for page layout that exploited the graphical user interface and included powerful layout capabilities for arranging and paginating content, was Aldus PageMaker, which was first available for use on the Macintosh computer. Today, other important DTP page layout systems include QuarkXPress, Ventura, Interleaf, and Frame Maker.

iii. **The DTP Printer:** The two key technological features of a DTP printer are a high resolution, all-points-addressable, matrix marking engine, and a high-function page description language.

a. **High Resolution Printing:** The products of late nineteenth- and early twentieth-century printing were aesthetically satisfying, but awkward and time-consuming to produce. The process was based on the use of metal type counters for type and engraving techniques for diagrams and art. Phototypesetting, which emerged later in the twentieth century, used optical and chemical techniques for typesetting, which improved functionality and maintained high-quality results, but still required very expensive equipment and highly trained operators.Early computer printing reverted to solid type counters and mechanical inking techniques; these printers were fast, but they had a limited range of typically fixed-width typefaces that resembled typewriter output. Furthermore, they limited the user's ability to place type on the page and so were far below the functionality and quality needed for publishing. Mechanical matrix printers that used a matrix of striking pins—commonly called dot-matrix printers—could more easily create variable-width type-faces and even crude artwork, but the low resolution of the mechanical matrix and the limitation of the mechanism meant that the results, although adequate for office documents and business communications, were still well below traditional typesetting requirements.DTP printers, on the other hand, use laser and ink-jet technologies and rely on marking techniques that organize the entire page into a very fine-grained matrix with more definition than is possible with a matrix of mechanical pins. This allows for the high resolution imaging of different typestyles and of both line and gray-scale bit-map graphics.The first computer printer to use this technique was the Xerox 9700, a 300 dpi ("dots per inch") laser printer released in 1979. The impact of this first commercial laser printer was limited in part by a lack of software that could take advantage of its functionality. In 1979 computer composition was based on batch processing, with little support for graphics or printing preview. The 9700's internal software for operating it in **all-points-addressable mode** could not be accessed by most existing composition or text processing

software. In the early 1980s, another high-resolution matrix technology appeared commercially as part of a Hewlett-Packard ink-jet printer. However it was the Apple LaserWriter, a 300 dpi laser printer designed for the Macintosh computer, which ultimately inaugurated the DTP era in 1985. The LaserWriter's incorporation of the Postscript page description language gave it extraordinary functionality that fully exploited the capabilities of the high-resolution matrix engine.

In the early days of DTP, 300 dpi resolution was arguably still well below the visual quality available from traditional typographic printing services. As a result, the expression "near typeset quality" became common to describe output produced by these printers. However when the resolution rose to 600 dpi, and font designs and page description languages improved, many purchasers of typesetting services began to feel that the difference in quality between traditionally printed and DTP-produced pages was slight, and not worth the cost of selecting the more expensive traditional option.

b. **Page Description Language:** In the 1970s John Warnock, working at Xerox's Palo Alto Research Center (PARC), developed Interpress, a language for the control of high-resolution matrix marking. Warnock became dissatisfied with Xerox's marketing of Interpress and he left the company to form Adobe Systems. In 1984 Adobe released a page description language, Postscript, designed to provide precise programmable and device independent control of page images. This precise programmable control could exploit high-resolution marking engines to produce scaleable high-quality diagrams and artwork as well as aesthetically satisfying typography. In addition, the possibility of single printer language interface for communication between printers and page layout software simplified the engineering of both. Today almost all publishing systems are Postscript based, with word processing or page layout software producing a Postscript data stream (representing the formatted text), which is then sent to Postscript-based printers, where it undergoes "raster image processing" (RIP), which converts the programming instructions to a bitmap page image.

6.2.3 WHY DESKTOP PUBLISHING IS IMPORTANT?

Desktop publishing and strong graphic design make documents look better, but there's more to desktop publishing than just appearance. Used properly, desktop publishing enhances visual communication and streamlines the process of disseminating information of all kinds. It's also the method of file preparation that ensures files print properly so that communications get out in a timely manner.

"Desktop publishing" is the current state of publishing. It is an anachronistic term, a holdover from the transition of hand-set letterpress type, optical Mergenthaler type, and hand-crafted "camera-ready" flats, to electronic documents that can be sent to a local (desktop) printer, a commercial offset or digital press, a website, or as an email attachment.

The literal answer to question "What is the reason as to why desktop publishing is important?" is

"because reading is important." Publishing is simply preparing documents for mass consumption - be it newspaper, printed books, website, online news media, chat rooms or online forums. DTP is the essential step between creative writing, journalism, illustration, editorialization, and the final distributed product to be read/viewed. This is one of the latest development in the typesetting industry which provides a fast, flexible, enviro-friendly and relatively inexpensive method of setting types by using photo-sensitive film or paper.

In today's competitive world digital content and its printing is playing a vital role in marketing but this can be only gained by best Desktop Publishing so this is very important as am describing below:

i. **Desktop Publishing is cost-effective:** Desktop publishing is a vital tool that improves communication by making it possible to create printed and electronic documents, without the need for costly infrastructure. Apart from skilled graphic designers, almost all business owners, book publishers, website owners utilize desktop publishing for their publishing needs.

ii. **Desktop Publishing is available to each person:** Availability of reasonably priced software and computers makes it possible for end-users to create their own publications. Desktop publishing software enables the user to reorganize graphics and text on screen, change typefaces, and resize graphics. Simply by adhering to a few rules of desktop publishing, users are able to turn out specialized-looking documents.

iii. **Desktop Publishing Is Affordable:** Desktop publishing is important as a tool that enhances communication by making it possible to efficiently produce printed and electronic—online or onscreen—documents, without the expertise and expensive equipment that was once required. Although skilled graphic designers use desktop publishing, so do small business owners, freelancers, website owners and club presidents.

iv. **Desktop Publishing Is a Desirable Skill Set:** Employers are looking for employees with desktop publishing skills for many of their job openings. That means office managers, teachers, administrative assistants, real estate agents, restaurant managers, and just about any office or clerical job—and many that aren't—require some level of desktop publishing skills. In the office environment, that may mean at a minimum familiarity with the Microsoft Office Suite or Publisher. Students, individuals on a tight budget and job-seekers can all save money by learning basic desktop publishing skills to improve the look and clarity of their papers or resumes. Adding desktop publishing to your resume may give you that extra something many employers look for.

6.2.4 TYPES OF SOFTWARE USED IN DESKTOP PUBLISHING

Earlier, DTP was specifically meant to cater to printed matter but modern DTP allows for even more forms of electronic content. A modern DTP software can be your word processor, graphic design tool

and publishing tool, all rolled into one package. With the explosive growth of smartphones and mobile PCs, the way people consume information has changed dramatically over the last decade. Modern DTP software enables content output that caters dynamically to all screen sizes, without the need to republish the same for each device or form factor.

Types of DTP Content: The content created by DTP software can be broadly classified into two categories:

- **Electronic Pages**: Electronic pages commonly refer to websites, manuals, eBooks, digital archives, presentations, etc. which are normally not printed but are shared digitally. This tutorial is an example of an electronic page which can be opened in a browser.

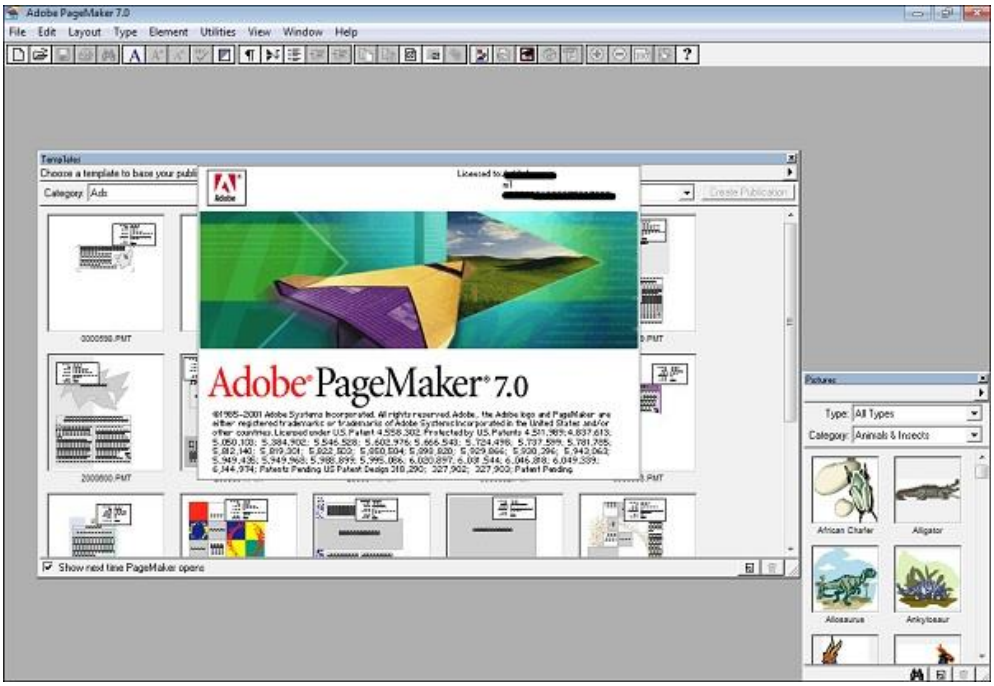
- **Virtual Pages**: **Virtual pages** on the other hand are electronic pages created in the DTP software which are eventually published as printed pages. Virtual pages allow the author to visualize exactly how the printed page will look and can help in easy editing. The process is called **WYSIWYG** which stands for, **'What You See Is What You Get'**. This means all the changes and formatting that are made will be exactly replicated in print.

In addition to the sometimes fuzzy division of desktop publishing into professional, home and business categories, there are other types of software closely associated with desktop publishing. Of the four types of software for desktop publishing — word processing, page layout, graphics, and web publishing — each is a specialized tool used in publishing, but the lines are blurred. Much of the best design software is used for both print and web and sometimes doubles as page layout and graphics software, creative printing and business software or other combinations.

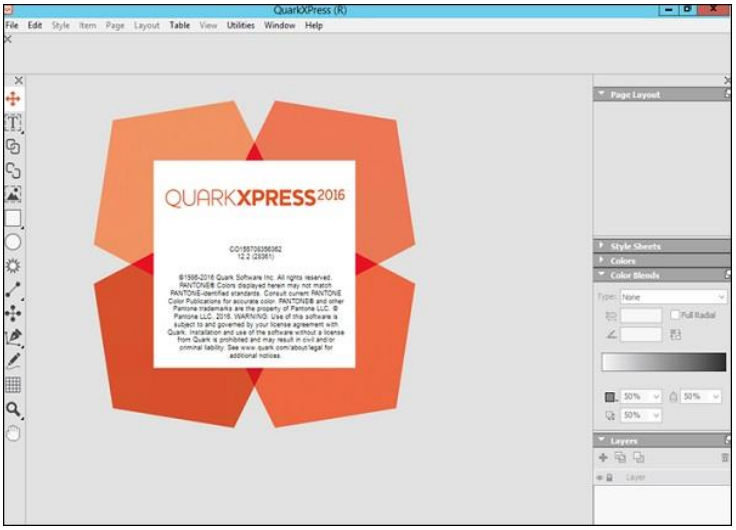
- **Word Processing Software:** Microsoft Word, Google Docs for Windows PCs and Macs and Corel WordPerfect for PCs.
- **Page Layout Software:** Adobe InDesign, QuarkXPress for PCs and Macs, Serif PagePlus and Microsoft Publisher for Windows PCs.
- **Home publishing software:** The Print Shop, Print Artist for Windows PCs and PrintMaster for PCs and Macs.
- **Graphics Software:** Adobe Illustrator and Inkscape are examples of professional vector illustration software for PCs and Macs, CorelDraw is available for PCs, Corel WordPerfect for PCs.
- **Photo editing software:** Adobe Photoshop, Corel PaintShop Pro
- **Electronic or Web Publishing Software:** Adobe Dreamweaver

DTP software comes in all shapes and sizes. There are software to cater to every need right from free software to professional grade subscription based software. Although InDesign has now taken over the DTP market, in this section, we will take a look at some of the popular DTP software other than InDesign that are also quite popular with the publishers.

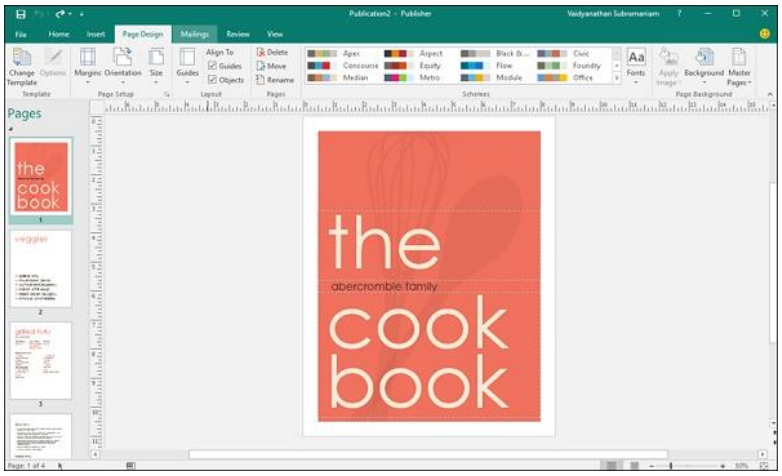
i. **ADOBE PAGEMAKER:** PageMaker was first originally developed by Aldus and was later acquired by Adobe in the 90s. PageMaker is one of the most popular DTP software even today but its development has been stopped after version 7 although it is still being marketed to a select set of users. PageMaker's features are now integrated with InDesign, which Adobe actively promotes.PageMaker has tools for almost all DTP applications except book publishing. It can import files from PDFs, HTML, and convert QuarkXpress and Microsoft Publisher formats. It has support for plugins and runs on both Mac and Windows.



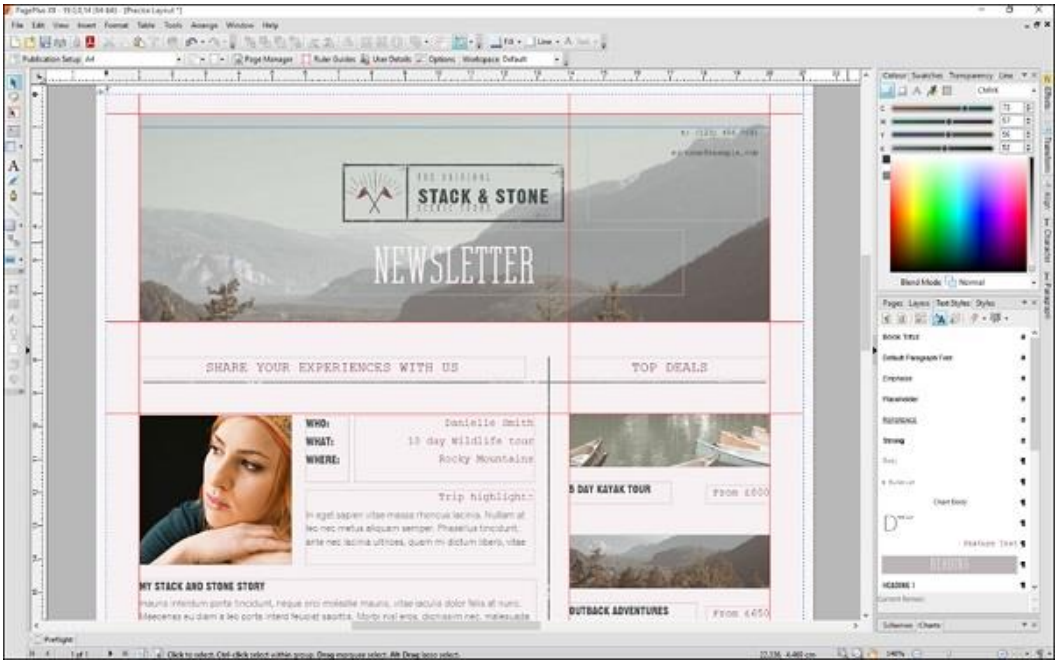
ii. **QUARKXPRESS:** QuarkXpress was the de facto publishing standard before the advent of InDesign. It is still under active development on both Mac and Windows and the latest version is more or less feature similar to InDesign.QuarkXpress supports converting Illustrator, PDF, EPS or even InDesign files into native QuarkXpress objects and runs on a perpetual license instead of a subscription model. The latest update also includes the ability to export HTML5 interactive publications. It also supports plugins called, XTensions for additional capabilities.



iii. **MICROSOFT PUBLISHER:** Microsoft Publisher is part of the Office 365 suite and is distributed as a standalone application. It is extremely simple to create flyers, brochures or cover art with this program as the interface is similar to other Office programs such as Word or Excel. It is more of an entry level software targeted at home and small businesses and does not directly compete with QuarkXpress or InDesign.Microsoft Publisher is very easy to use and supports professional effects for text and pictures along with the ability to natively import albums from Facebook, Flickr, and other cloud services.



iv. **SERIF PAGEPLUS:** PagePlus has now become a legacy software with the reins passing on to Affinity Publisher, which is yet to be released. However, Serif PagePlus continues to be a delight to anyone who is at an intermediate level with respect to DTP.It is a step up from Microsoft Publisher and supports the CMYK color space, which is commonly used by printers and also OpenType fonts. It also has advanced features such as font kerning and dynamic text flow along with a host of templates on the Serif website. An icing on the cake is the presence of an integrated photo editor called **PhotoLab**, which gives easy access to picture correction tools. The latest version also supports creation of PDF files and eBooks suitable for Amazon Kindle. There's also a free Starter Edition available if you want to try out the software.



6.2.5 SPECIFIC CHARACTERISTICS OF DESKTOP PUBLISHING SOFTWARE

Software's that allow the user to perform designing, typesetting, paste up functions with a single application program are called Desktop Publishing Software. Main features of DTP software packages can be grouped into four categories:-

- **Typesetting Based:** Setting text into multiple columns -- Formatting text -- Setting headlines, sub headings, header, footers and page numbers -- Tables -- Generating Table of Contents, Index automation --Composing multiple file into single document -- Creating and placing the footnotes -- Setting mathematical equations and special symbols – Kerning – Tracking -- Drop caps, initial caps -- Rotating text
- **Page Layout Based:** Alignments -- Line spacing -- Tab, indentation -- Master pages
- **Graphics Based:** Importing graphics -- Scaling and cropping--Attaching captions -- Creating simple graphics with a document--Borders, lines, shading -- Running text around graphics -- Applying colors to gray scale images
- **Pre-Press Based:** Spot color and process color separations -- Crop marks (to show the corners of Page precisely) and registration marks (allow precise alignment of color separation and multiple page layouts used on press signature. -- Trapping – process to add tiny overlap to adjacent color elements on a page to account for possible misalignment of press.

Other applications and utilities often included in the desktop publishing software category are better classified as graphics, web publishing, and presentation software. Nonetheless, they play an important role in print and digital media. The DTP programs covered in this article do the core task of desktop publishing — composing text and graphics into page layouts for publishing.

An explosion of consumer programs and the associated advertising hype stretched the use of "desktop publishing software" to include software for making greeting cards, calendars, banners, and other crafty print projects. This resulted in a wide range of low-end, low-cost, easy-to-use software that doesn't require traditional design and prepress skills to use. The primary page layout software applications in use by professional graphic designers and commercial printing prepress technicians are Adobe InDesign and QuarkXPress.

DTP software's packages, especially in graphics print related areas, is dominated by two highly successful software programs – Adobe PageMaker and QuarkXPress. PageMaker was the first major DTP application and has held a dominant position over since DTP was developed. PageMaker works on the basis of copy and images being pasted onto drawn up grids, whereas QuarkXPress uses frames for handling text and graphic elements allowing designers more freedom in layout.

Below is a list and description of the most basic and essential features that any desktop publishing software should have. Some of them may prove more crucial than others depending on the type of print project you are working with. Though these features are important, the list surely does not end here.

i. Handle a wide range of page sizes, orientation and measurement systems – e.g. inches, millimetres and point system
ii. Create left and right hand pages, plus facing master multiple pages and templates
iii. Record number of pages, and highlight pages(s) in use
iv. Create page layout grid, with column and ruler guides
v. Edit and spell check facilities
vi. Page views in reduction and enlargement increments – e.g. from 25% to 400%
vii. Control over choice of typeface, style, size, letter and line spacing, kerning, alignment and rotation
viii. Control over hyphenation and paragraph style
ix. Basic drawing tools and facilities – covering lines in different thicknesses and patterns, shapes and circles, ovals, rectangles and hexagons, fill and line, tints
x. Tabulation facilities and controls
xi. Import and edit text, line and graphics from a wide range of sources, plus export of files in recognized formats suitable for other applications
xii. Crop, scale and rotate images
xiii. Cut, copy, paste facilities
xiv. Control over halftone images covering brightness and contrast, screen frequencies and angles
xv. Import, process and output color separations
xvi. Export/print to a wide range of output devices such as laser printers and image setters
xvii. Control palettes and icons providing user-friendly working practices and guidance

For the moment, desktop publishing presents itself as a great solution for small business and even big business. It is as simple as identifying needs and areas where desktop publishing can provide a

solution and finding the right software to help you get there.

6.2.6 ADVANTAGES OF DESKTOP PUBLISHING

DTP allows you to control the look of a document (its 'presentation') at the same time as you are developing the content. When DTP tools first appeared, they were exciting because they removed the tortuous and time-consuming typesetting step required for printed documents. This development was especially welcomed by people who wanted to produce relatively small documents quickly and cheaply. However, for professional documents, there are more aspects to publishing than content and presentation. There are also these:

- **Structure:** at a low level (section levels, numbering, and organization), and high level (what related documents contain and how they are connected)
- **Access:** if printed, how and where documents are stored and distributed; if online, how documents are found and linked
- **Presentation Flexibility:** what different types of output are needed (paper, pdf, browser on a desktop or handheld, etc.) and how they are kept up-to-date and synchronized
- **Content Reuse:** often parts of documents can be reused in other documents to improve consistency and reduce costs
- **Internationalization:** translation times costs are usually significant and errors can be dangerous

The high end DTP systems (such as FrameMaker, QuarkExpress, and InDesign) are trying to add features to manage all these aspects of publishing with some success. But, in my opinion, they are only complicating their user interfaces to accommodate everything and everyone. Desktop Publishing brings with it a variety of benefits, for instance enhanced aesthetical appearance, increased productivity, improved look and feel of the documents, reduced production costs, and better turnaround time etc.

BENEFITS OF DTP

- **Complete Control –** it allows user to have complete control over the type settings, graphics placements, page layout and pre-press matters.
- **More Flexible –** the layout on the computer monitor gives the information regarding the appearance and applies the changes at any time and any no. of times to make the systems flexible.
- **Fewer Errors –** as the text is entered by keyboard and no. of persons involved are less. There are auto correct features so there are changes for error to minimum extent in DTP.
- **Simpler and Faster –** settings like no. of columns, specifications for margins etc. are easy to make and change. This makes it faster and simpler
- **Advanced Features –** the advanced feature are introduced in the softwares to make the publication creation more easy and effective to enhance the efficiency & quality.

- **Cost Reduction –** as for DTP the changes can be flexibility made, time consumption is less, and floor space need is reduced. No. of employed people are less so the cost of publication creation is also reduced.
- **Re-use and Re-production –** the created publications can be saved in the system for future reproduction or reference and they can be reused for other jobs also without making extra efforts again for same type of matter.

6.2.7 THINGS YOU CAN DO WITH DESKTOP PUBLISHING

With desktop publishing software and hardware you can:

- Design print communications such as brochures, fliers, ads, and posters.
- Design print communications such as catalogues, directories, and annual reports.
- Design logos, business cards, and letterhead.
- Design and publish newsletters, magazines, and newspapers.
- Design books and booklets.
- Convert print communications to formats for the web and smart devices such as tablets and phones.
- Create resumes and business forms including invoices, inventory sheets, memos, and labels.
- Self-publish books, newsletters, and e-books.
- Design and publish blogs and websites.
- Design slides shows, presentations, and hand-outs.
- Create and print greeting cards, banners, postcards, candy wrappers, and iron-on transfers.
- Make digital scrapbooks and print or digital photo albums.
- Create decorative labels, envelopes, trading cards, calendars, and charts.
- Design packaging for retail merchandise from wrappers for bars of soap to software boxes.
- Design store signs, highway signs, and billboards.
- Take work designed by others and putting it into the correct format for digital or offset printing or for publishing online.
- Create more attractive, readable reports, posters, and print or on-screen presentations for school or business.

6.3 CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

FILL IN THE BLANKS.

1. DTP stands for_____.
2. WYSIWYG stands for_____.

3. PDF stands for_____.
4. Desktop publishing involves the combination of _____, _____, _____ and _____ the document.
5. _____ is the use of the computer and software to create visual displays of ideas and information.
6. _____uses text and graphics to communicate an effective message in the design of logos, graphics, brochures, newsletters, posters, signs, and other types of visual communication.
7. _____is a spin-off of graphic design and desktop publishing that focuses exclusively on visual communications for display on websites and mobile devices – to include text, graphics, sound, animation, and video.
8. Desktop publishing was first developed at Xerox PARC in the _____.
9. The two key technological features of a DTP computer are an inexpensive personal computer with a _____based on windows, icons, menus, and point-and-click actions, and _____page layout software.
10. The two key technological features of a DTP printer are _____, all-points-addressable, matrix marking engine, and a high-function _____.
11. _____ produces Microsoft Word, Excel, PowerPoint and various consumer graphics and creative printing programs used alone or in conjunction with other applications to do some form of desktop publishing.
12. The content created by DTP software can be broadly classified into two categories is _____ and _____.
13. _____was the de facto publishing standard before the advent of InDesign.
14. _____ is that the method and art of mixing text and graphics and human activity a good message within the style of logos, graphics, brochures, newsletters, posters, signs, and the other style of communication.

6.4 SUMMARY

- Desktop publishing is the use of the computer and software to create visual displays of ideas and information. Desktop publishing documents may be for desktop or commercial printing or electronic distribution, including PDF, slideshows, email newsletters, electronic books, and the Web.
- Today, desktop publishing includes much more than just print publications. It's publishing as PDF or an e-book. It's publishing to blogs and designing websites. It's designing content for multiple platforms, including smartphones and tablets. Desktop publishing is the technical assembly of digital files in the proper format for printing or for electronic distribution. In practical use, much of the graphic design process is also accomplished using desktop publishing,

graphics software, and web design software and is sometimes included in the definition of desktop publishing.

- Desktop publishing (DTP) relies on two primary hardware components: 1) a computer, supplemented by various input devices including scanners and cameras, and 2) a printer that can produce high quality typographical and pictorial output. The process of on-screen DTP page composition is made possible by WYSIWYG (what you see is what you get) page layout software for personal computer use, and page description languages, programming that bridges the gap between the page layout software and the printers that produce pages that match what the user sees on the computer screen.

6.5 KEYWORDS

Hardware: All electronic, Electrical and mechanical components used in a computer.

Software: Computer programs that control the hardware components.

Graphics Software: An application used for painting and drawing on the computer screen and also for manipulating the scanned images in various ways with the help of various tools.

6.6 SELF-ASSESSMENT TEST

47. What are programs for Desktop Publishing?
48. What is Desktop Publishing vs. Word Processing?
49. What can you do with DTP programs?
50. Briefly describe the history of Desktop Publishing.
51. Explain the hardware and software support required for DTP.
52. Elaborate some specific characteristics of commonly used DTP software
53. Why Desktop Publishing is important?
54. List the benefits of Desktop Publishing System
55. Differentiate between DTP and Graphic Design.
56. Where Is Desktop Publishing Used?
57. List the software's that are used in Desktop Publishing.

6.7 ANSWERS TO CHECK YOUR PROGRESS

11. Desktop Publishing
12. What You See Is What You Get
13. Portable Document Format
14. Typesetting, graphic design, page layout, printing
15. Desktop Publishing
16. Graphic Design
17. Web Design
18. 1970

19.Graphical User Interface (GUI), WYSIWYG

20.High Resolution, Page Description Language

21.Microsoft

22.Electronic Pages, Virtual Pages

23.QuarkXPress

24. Graphic Design

6.8 REFERENCES / SUGGESTED READINGS

9. Typography Practices by B. D. Mendiratta

10.Art and Production by N.N. Sarkar

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
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VISUAL COPY OF REPRODUCTION, COLOUR AND PRODUCTION ASPECTS	

STRUCTURE

7.0 LEARNING OBJECTIVES

After going through this lesson, you will be able to:

- **Define the Reproduction of Visual Copy.**
- **Identify the Concept of Various Colour Theories and Schemes.**
- **Acquaint about Applications of Colours for print production.**

7.1 INTRODUCTION

Copy is anything required to be reproduced. Visual copy means any text, images or graphs etc.

or combination of all above which are required to be taken care while reproducing. A copy may be coloured or black and white. Colors are of philosophical interest for a number of reasons. One of the most important reasons is that color raises serious metaphysical issues, concerning the nature both of physical reality and of the mind. Among these issues are questions concerning whether color is part of a mind-independent reality, and what account we can give of experiences of color. These issues have been, and continue to be, inextricably linked with important epistemological and semantic issues.

7.2 VISUAL COPY

A picture, piece of film, or display used to illustrate or accompany something is called visual copy.Our perception of a visual is affected by its medium, e.g., as a photograph, a printed image, a slide projected on a white screen, a view-finder image, a computer-generated image, etc. A movie evokes completely different perceptions when a viewer watches it alone on TV (possible via a VCR) or in a crowded movie theater with a wide-screen and high-quality sound and images. An image is a multidimensional representation of an inner or external reality. Depicting the physical structure of the objects or events it represents. An image can also be described as a more or less complicated sense of vision, ie., awareness of the stimulation of the eye's vision perception cells, with a specific message/content.

An inner image, a visual experience, can originate in thoughts and in dreams. It may be caused by words, e.g., a picture description, without any help of pictures. Every possible visual, every format has different possibilities of supplying specific message/content. This depends on the choice of material and type of production.

If you are about to embark on a content marketing campaign, you need to know exactly what will stimulate online growth and engagement. Text-based content is always going to be an integral part of marketing, but to really set yourself apart in the digital era, visual content must play a pivotal role in all of your efforts.When you consider that 65% of people are visual learners, 90% of information that comes to the brain is visual, and presentations with visual aides are 43% more persuasive, it makes sense to use content types which people have an innate psychological resonance with.Here are some types of visual content which will take your marketing campaign to the next level.

7.2.1 VISUAL COPY OF REPRODUCTION

When it comes to creating effective print production, strategic and thoughtful visualization is the key. Print production today offer a highly valuable and targeted technique compared to their digital counterparts.

Rather than constantly bombarding the target market with spam emails and other digital marketing material, print offers a more curative approach. Since print ads use tangible, physically printed media, it's especially important to take the following design considerations into account to ensure your business is delivering the most effective advertisement possible.Here are our top rules for reproduction of the copy:-

1. **Make Sure Copy is Clean and Concise:** Skilled copywriters know how to communicate your message in a clean and concise matter. Stay away from needlessly ornate language and convoluted sentence structure that is not suitable for most advertising mediums. Ensure your ad copy is free of spelling and grammatical errors for a result that is clear and professional.
2. **Effective Utilization of White Space:** When designing an effective print ad, the graphics and structure are just as important as the copy. Many businesses feel they must occupy all white space of an ad with informative text and imaging, but this can feel overwhelming to prospective consumers. Having a proper white space ratio makes print ads more visually appealing and reader-friendly.
3. **Use Headlines Effectively:** While print advertising is far less saturated than the digital space, it's important to use powerful headlines to grab the reader's attention – persuading them to continue reading. Your main title should be simple and short, as you want to peak the curiosity of your target consumers without listing facts about your business. Also, if your ad is on the longer side, it might be helpful to use subheadings to break down the information. This way it's more organized and easy to comprehend.
4. **Simplicity is Key:** You want to avoid choosing fonts or text styles that are extremely fancy. Most newspapers and magazines tend to follow a specific format – they use plain font, avoiding anything over serifed, and use black standard size text on a white background. While you can be more creative with your titles, stick to something simple for your body text to maintain an ease of reading for your potential customers.
5. **Consider Images Carefully:** Many people are visual and possess relatively short attention spans, so ads that are exclusively textual may be off-putting. For this reason, using images and/or graphics correctly can help communicate your message. Avoid using generic photos purely for decorative purposes and make sure any visual imagery works alongside your

copy. Keep in mind that original photography often works better than stock photos and of course, don't go overboard.

6. **Create a Call to Action:** A lot of print ads tend to start off strong but then fizzle out towards the end. When designing your ad, try to create a sense of urgency at the end by creating a call to action. Perhaps you want to provide a coupon with an expiry date, encourage them to sign up for a newsletter on your website, or offer a complimentary quote or consultation.
7. **Be Unique:** What stands out about your product or service? Embrace your brand in your print ad, the text and design should help create a feeling that is unique to effectively demonstrate what sets you apart from competitors. This is known as a "Unique Selling Proposition". While your product or service does not have to be the only one on the market, it's best to promote it from a unique angle.
8. **Describe the Benefits:** It's important to describe the features of your particular product or service. Ask yourself: what makes it different from competitors? Be sure to focus on the solution you provide to a particular need rather than focusing on the problem itself. You may also want to include testimonials from previous customers describing outstanding service or satisfaction with the product.
9. **Ensure Contact Information Stands Out:** Make sure your contact information isn't buried in the ad and try to provide various avenues of getting in touch (phone number, website, address etc.). This ensures the customer has options, so they'll be more likely to contact you.

Investing in your business' marketing strategy is fundamental for creating brand awareness and driving sales. Direct Response Media Group offers top notch print design solutions for all your shared media products and print advertising needs. Contact us to learn more.

7.2.2 COPY FOR IMAGE REPRODUCTION

With the implementation of specific inventions, such as the photographic camera, the world perceives and understands images, ideas, etc. in a different way. Technologies are developing in a way that they are creating a significant effect on societies and most importantly they are the product of the societies' ideologies that exist in each of them. For example, today, photography is considered to be a visual technology that helped with the development of the modern age and it became a main characteristic of the era – reflecting societies' daily life and ideology. Moreover, it became a popular medium in the early nineteenth century because it was able to

meet many of the social demands during this era. For example, it was able to illustrate "modern ideas about the individual in the context of growing urban centers, and modern concepts of technological progress and mechanization".

The proper composition of visual elements generates not only visual stability, it enhances mood through composition and generates order that prevents visual chaos. Designers use compositional rules in their work to make the reader enter their work and experience a design environment that is calm yet exciting, quiet yet interesting. A magazine designer, for example, creates a grid and applies an order to the typographic elements creating a comprehensible hierarchy. This design system is interpreted in different ways, in pages and spreads, issue after issue. If the organizational system is versatile and planned with thought and depth, it can be used to produce unique and exciting layouts that remain true to the rules determined for the overall system initially designed. Organizational principles create a framework for design without determining the end results.

7.2.3 COLOUR

Colour is the characteristic of visual perception described through color categories, with names such as red, orange, yellow, green, blue, or purple. This perception of color derives from the stimulation of photoreceptor cells (in particular cone cells in the human eye and other vertebrate eyes) by electromagnetic radiation (in the visible spectrum in the case of humans). Color categories and physical specifications of colour are associated with objects through the wavelengths of the light that is reflected from them and their intensities. This reflection is governed by the object's physical properties such as light absorption, emission spectra, etc.

By defining a color space, colours can be identified numerically by coordinates, which in 1931 were also named in global agreement with internationally agreed colour names like mentioned above (red, orange, etc.) by the International Commission on Illumination. The RGB colour space for instance is a colour space corresponding to human trichromacy and to the three cone cell types that respond to three bands of light: long wavelengths, peaking near 564–580 nm (red); medium-wavelength, peaking near 534–545 nm (green); and short-wavelength light, near 420–440 nm (blue). There may also be more than three color dimensions in other colour spaces, such as in the CMYK colour model, wherein one of the dimensions relates to a color's colorfulness).

7.2.4 COLOUR THEORIES

Additive colour is light created by mixing together light of two or more different colours. Red, green, and blue are the additive primary colours normally used in additive colour systems such as projectors and computer terminals. Additive colour theory has many applications in eyes, projectors, monitors and other computer screens.

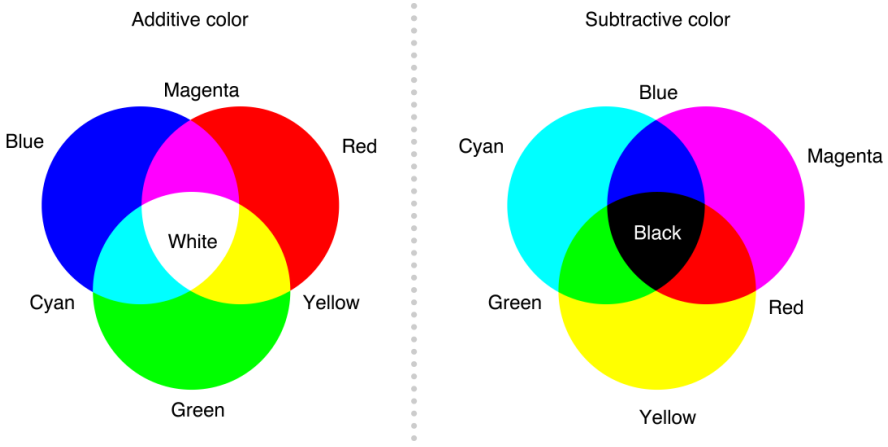


Figure: Additive and Subtractive Colour Theories

Subtractive coloring uses dyes, inks, pigments, or filters to absorb some wavelengths of light and not others. The color that a surface displays comes from the parts of the visible spectrum that are not absorbed and therefore remain visible. Without pigments or dye, fabric fibers, paint base and paper are usually made of particles that scatter white light (all colors) well in all directions. When a pigment or ink is added, wavelengths are absorbed or "subtracted" from white light, so light of another color reaches the eye.If the light is not a pure white source (the case of nearly all forms of artificial lighting), the resulting spectrum will appear a slightly different color. Red paint, viewed under blue light, may appear black. Red paint is red because it scatters only the red components of the spectrum. If red paint is illuminated by blue light, it will be absorbed by the red paint, creating the appearance of a black object.

7.2.5 COLOUR SCHEMES

Colors that look good together are called a color harmony. Artists and designers use these to create a particular look or feel. You can use a color wheel to find color harmonies by using the rules of color combinations. Color combinations determine the relative positions of different colors in order to find colors that create a pleasing effect.

There are two types of color wheel. The RYB or red, yellow, blue color wheel is typically used by artists, as it helps with combining paint colors. Then there is the RGB, or red, green and blue color wheel, which is designed for online use, as it refers to mixing light – like on a computer or TV screen. Canva's color wheel is an RGB color wheel, as it is designed for online use.

Figure: Colour Wheel Containing Various Colours

A color scheme, part of the larger field of color theory, is a grouping of complementary colors used in interior design. The "scheme" part of the phrase refers to the intent behind the arrangement. It's not just about colors that look nice next to each other—it's about colors that highlight and amplify each other for the most optimized effect.

Note that a color scheme is different than a color palette, though the two terms are often used interchangeably. The scheme is the logic behind the arrangement, while the palette is the colors themselves.

The benefit to familiarizing yourself with color schemes instead of just what colors work together is that once you start to learn about the intent behind color arrangements you also start to learn how to identify colors that work well together on your own. The more you understand about how colors relate to each other, the better you'll be at tackling that aforementioned (and oh-so-overwhelming) wall of paint swatches.

DIFFERENT TYPES OF COLOR SCHEMES

There are a lot of different color schemes out there, and each of them relates to a different way that interior decorators use colors in their designs. Sometimes, multiple color schemes will be represented throughout a home, while other times, one theme may define the

entire look of the space. How you work these schemes into your own home depends on the overall look that you're trying to achieve, as well as the layout of your house.

MONOCHROMATIC COLOR SCHEME

In a monochromatic color scheme, the entire space is dictated by one color, with variations in tints, shades, saturation, and textures to add depth and variance (and to prevent the space from being too over the top).

Figure: Monochromatic Color Scheme

The benefit of a monochromatic color scheme is that it instantly gives off professional vibes, since working within this scheme adds an element of cohesion to a space regardless of what else is going on. If you're worried about going too bold though with monochromatic, opt for a neutral color as your base, such as gray or beige.

ANALOGOUS COLOR SCHEME

Remember the color wheel from art class in grade school? The analogous color scheme puts that wheel to work in your home by using colors that are next to each other on the wheel, thereby creating a look based off of colors that, while different, are just a step's distance from each other.

Figure: Analogous Color Scheme

This sort of color scheme is often found in nature, with a dominant color complemented by various other colors that envelop it on the wheel. Generally, this color scheme is relegated to just three colors—meaning you pick a color on the wheel (say, dark green) and then use the colors on either side of it (in this case, light green and light blue). Use your dominant color as a main focal point—such as an accent wall—and then use its analogous partners to decorate elsewhere throughout the room.

COMPLEMENTARY COLOR SCHEME

This is another scheme that goes directly off the color wheel, but in this case, it's colors that are complementary to each other, meaning directly across from each other on the wheel—think yellow and purple, orange and blue, and red and green.

Figure: Complementary Color Scheme

The high contrast between these colors creates visual depth and a vibrant look, but because it can also can come also come off as a little heavy handed—especially if you're using highly-saturated tones—it helps to offset a complementary color scheme with the addition of some neutral touches.

SPLIT-COMPLEMENTARY COLOR SCHEME

If you like the idea of a complementary color scheme but are worried about the looking being too much, consider going with a split-complementary scheme instead. This color scheme uses one main color on the wheel and then the two colors that are on either side of its complementary counterpart.

Figure: Split Complementary Color Scheme

To illustrate, consider the complementary pairing of yellow and purple. To modify it to split-complementary, you would take one of the colors, let's go with yellow, and then the two colors on either side of purple, so light purple and dark blue. The effect tends to have a bit more balance than a straight complementary scheme, and is a good choice for beginners since it's pretty foolproof to implement.

TRIADIC COLOR SCHEME

A triad is a group of three, so as you might expect, the triadic color scheme utilizes three color in a space—in this case, colors that are evenly spaced around the color wheel such as that when you draw a line between them you get a triangle.

Figure: Triadic Color Scheme

To make this scheme work, you'll want to keep monochromatic principles in mind, meaning you'll want to play around with tint and saturation instead of going all vibrant all the time, which can break up the harmony. For optimal balance, choose one color of the triad to serve as the dominant color in the space, and then use the other two for accents.

TETRADIC COLOR SCHEME

Figure: Tetradic Color Scheme

The tetradic color scheme takes the triad a step further by adding in one more color for a total of four. These are usually two sets of complementary colors, spaced so that when you draw a line between them you get a rectangle. There are lots of opportunities for variation and creativity here, but again, make sure to mix it up with tints and tones so you don't end up with an overly loud effect. Balance out warm and cool colors, and like you would do in a triadic color scheme, let one color dominate while the others serve as accents. Too many colors in charge, just like too many cooks in the kitchen, will be overly busy and a much less productive use of space.

SQUARE COLOR SCHEME

We've got triangles and rectangles, so how about squares? The square color scheme is similar to the tetradic scheme in that it is composed of four colors. However, instead of combining to make a rectangle when lines are drawn between each color on the wheel, the shape that's made is a square. To break that down even further, we have two sets of complementary colors with each color separated two colors from the next one. The same rules of balance and variation apply here as they do with triadic and tetradic color schemes.

Figure: SquareColor Scheme

For most of the color schemes above, you'll want to have a color wheel handy as you decide on your palette. Using these principles—and the wheel itself—will take the guesswork out of how you use color in your space, and should result in a stunning, harmonious home that you love to be in.

7.2.6 PRODUCTION ASPECTS OF COLOUR

Color printing or colour printing is the reproduction of an image or text in color (as opposed to simpler black and white or monochrome printing). Any natural scene or color photograph can be optically and physiologically dissected into three primary colors, red, green and blue, roughly equal amounts of which give rise to the perception of white, and different proportions of which give rise to the visual sensations of all other colors. The additive combination of any two primary colors in roughly equal proportion gives rise to the perception of a secondary color. For example, red and green yields yellow, red and blue yields magenta (a purple hue), and green and blue yield cyan (a turquoise hue). Only yellow is counter-intuitive. Yellow, cyan and magenta are merely the "basic" secondary colors: unequal mixtures of the primaries give rise to perception of many other colors all of which may be considered "tertiary."

If you have ever taken a photograph with a digital camera and viewed your shot afterwards on the LCD screen, or scanned a document into your PC and then looked at the scan on screen, you have probably seen the effects of a lack of proper colour management. In short, the colours in the image you see on the camera's LCD or on a monitor screen may not sufficiently resemble those of the original.

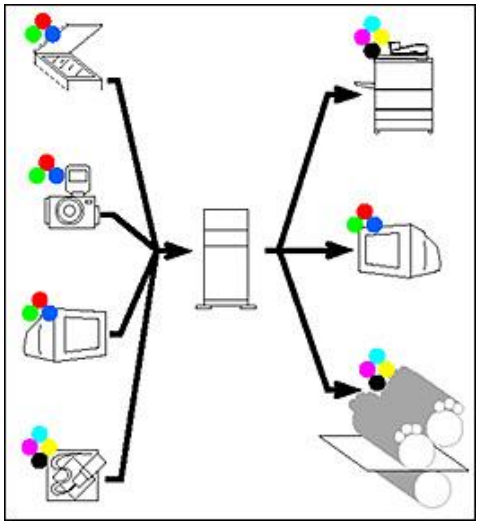


Figure: A colour management workflow. The computer in the middle represents CMM interacting with the user's requirements for different output needs.

The problem is that different devices handle colour in different ways. A monitor or LCD uses light to create colours while a printer will use inks or dyes. In addition, devices use several different systems of creating colours. A monitor might mix a hint of red, a splash of green and a pinch of blue light to produce a particular shade on a monitor while a printer might use dollops of cyan, magenta, yellow and black ink to produce the same shade. Different devices also have different colour reproduction capabilities, for example a picture on photo paper can have richer blacks and more vibrant colours than if it is printed on newsprint.

The environment in which something is viewed also makes a contribution. Consider going to see a movie. This is intended to be viewed in the dark, whereas a work of art in a gallery might be intended for viewing under very bright lights.

We are deep into the shift from an analogue world to a digital one, a major change that requires some adaptation. The traditional worlds of colour reproduction, such as photography, books and magazines, are now merging with elements from the contemporary world such as the internet and digital television broadcasting. We have become accustomed to using these different systems and are becoming more and more demanding in the quality and compatibility of the different devices associated with them. This is why colour management standards have become necessary. Users would like colour management to work and be interoperable. Manufacturers know that well-designed colour management standards can enable interoperability while allowing for the differentiation necessary to drive ever-improving performance.

But how aware are people of what colour management involves? According to Lars Borg, principal scientist and engineering manager for core technology colour development at Adobe Systems Incorporated : "You have three levels of knowledge. There are people who know nothing about colour management, don't ever want to know about colour management and feel they should be saved from the intricacies of it. Then you have a second group who go to buy equipment and see that it has colour management on the box - they know it's a good thing but they don't know what it does or how to use it. Finally, there is an exclusive group of a few professionals who say 'Of course we should have colour management and we know how it works.'"

Standardization is an obvious answer to the challenges of colour management and three tiers of standards have emerged, corresponding in general terms to the three levels of understanding outlined by Borg.

For the handful of professionals who are at ease with colour management, the International Color Consortium (ICC)* has developed its own system of profiles to allow colour data to be reliably interpreted, and converted from one colour encoding to another, for different purposes, and to be used by different devices

In the additive colour theory, this is similar to how the human eye visualizes color. Devices like camera, projectors follow additive color mixture. The basic principles of good quality color reproduction are the following:

1. Correct mapping of critical reference colors such as sky, foliage and skin tones. This may not mean an exact match but simply that the reproduced color is not grossly wrong. For example, almost any shade of blue will produce a satisfactory sky; even shades of purple would be fine, but green is clearly wrong.
2. Correct mapping of white and neutral colors that constitute the gray axis or the neutral axis which runs from black to white. These colors should look neutral, else the image will have an overall color cast, or an overall color tint.
3. Control of the tone reproduction involves mapping of the overall contrast and brightness. Image reproduction often involve tone compression. The goal is to reproduce, as best as possible, detail at all levels of brightness throughout the image while maintaining a correct overall appearance.
4. Control of the overall colorfulness so that the image does not look washed out or gaudy.
5. Control of sharpness, texture and other visual artifacts that contribute to image appearance.

Another parameter which is to be taken care while printing is colour gamut. The color gamut of a device describes the entire range of color that can be reproduced by the device. A color device usually have three primaries which can be plotted on the chromaticity diagram as shown by the white triangle. This white triangle represents all the hues of different saturation than can be generated by the device. The brighter and more saturated the primaries, the bigger the color gamut. However, note that it is not possible to cover the entire range of colors seen by humans even by choosing three monochromatic primaries (the most saturated colors). Also, note that this representation of the gamut on the chromaticity diagram does not contain any information about the minimum and maximum luminance that can be reproduced by the display. It only signifies the hue and saturation of the primaries, each of which can have

different minimum and maximum brightness. So, to complete the description, we need the information about white point and the dynamic range(more commonly called contrast). The white point gives the chromaticity coordinate of the white and the dynamic range is given by the ratio of the brightest and dimmest gray, i.e. white and black.

The three curves in the figure above shows the normalized response of an average human eye to various amounts of ambient light. The shift in sensitivity occurs because two types of photoreceptors called cones and rods are responsible for the eye's response to light. The curve on the right shows the eye's response under normal lighting conditions and this is called the photopic response. The cones respond to light under these conditions.

Human eyes consists of cones and rods, cones are composed of three different photo pigments that enable color perception. This curve peaks at 555 nanometers, which means that under normal lighting conditions, the eye is most sensitive to a yellowish-green color. When the light levels drop to near total darkness, the response of the eye changes significantly as shown by the scotopic response curve on the left. At this level of light, the rods are most active and the human eye is more sensitive to the light present, and less sensitive to the range of color. Rods are highly sensitive to light but are comprised of a single photo pigment, which accounts for the loss in ability to discriminate color. At this very low light level, sensitivity to blue, violet, and ultraviolet is increased, but sensitivity to yellow and red is reduced. The heavier curve in the middle represents the eye's response at the ambient light level found in a typical inspection booth. This curve peaks at 550 nanometers, which means the eye is most sensitive to yellowish-green color at this light level. Fluorescent penetrant inspection materials are designed to fluoresce at around 550 nanometers to produce optimal sensitivity under dim lighting conditions.

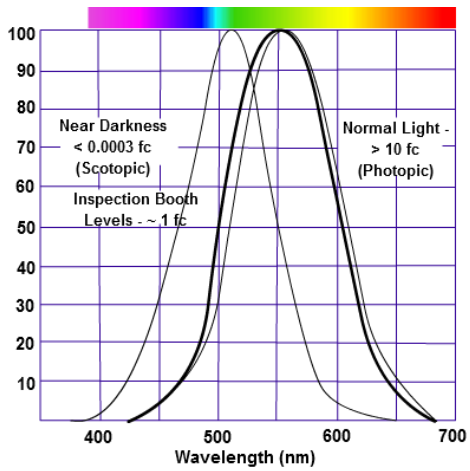


Figure: Human eyes response to colours

Color distortions that arise during the process of reproduction are uavoidable; the nature of such distortions depends on the particular features of the process.There are three methods of evaluati ng the fidelity of color reproduction: physical, physiological, and psyological. Physical fidelity is characterized by the degree to which the reproduction of a given point or small section on the image approximates the spectral composition of the radiation emanating from the correspondin g point or section on the original. Physiological fidelity is characterized by thedegree to which t he visual sensations evoked by a small area of the image approximate thoseevoked by the corres ponding area of the original.

A considerable degree of psychological fidelity can be attained if the color distortion in any area of the image is counterbalanced by specific distortions in other areas of the image. It is only the psychological fidelity that is of practical importance for the color reproduction of mult icolored images.Subtractive color systems put colored images in paper, either by printing with ink or by exposing special photographic paper. Subtractive color uses layers of cyan, magenta and yellow filters to create color. In photography, the dye layers of the film sequentially absorb the blue, green and red light. When developed, white light filtered through the layers recreates the image. Each layer modulates one of the red, green or blue component of the white light, leaving the other components unchanged. These layers plus the white light defines the subtractive color system. Subtractive color depends on selective absorption and hence depends critically on the spectral distribution of the illuminant.

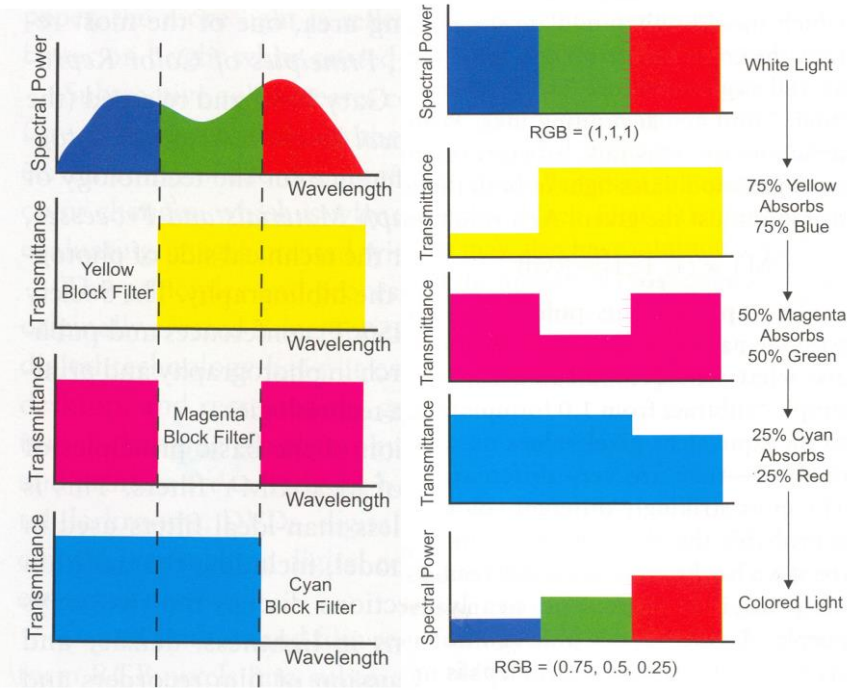


Fig. Left: Ideal cyan, magenta and yellow block filters. Right: Colour formation using block filter primaries

Then the out-of-gamut colors are projected toward the center of the gamut in a way that reduces saturation, and to a lesser extent brightness, while maintaining hue. This is called gamut mapping. No single gamut mapping method is often adequate for all images and different methods can be used depending on the application. Following are some popular gamut mapping methods.

1. Perceptual: Create an aesthetic mapping for images. Maps all colors smoothly into the target gamut, though those outside the gamut will move relatively more than those inside the gamut.
2. Saturated: This is usually used for charts and illustrative graphics that contains solid saturated colors. This mapping maintains the relative saturation while sacrificing the smoothness.
3. Relative colorimetric: This uses minimal color transformation that projects the out-of-gamut colors to the gamut surface with little or no-mapping of in-gamut colors. This is the default mapping for older printing systems.

3.9 CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

1. A picture, piece of film, or display used to illustrate or accompany something is called:
   - 3.9.1.1 Visual copy
   - 3.9.1.2 Graphics
   - 3.9.1.3 Visual art
   - 3.9.1.4 All the above
2. What characteristic of visual perception described through categories, with names such as red, orange, yellow, green, blue, or purple?
   - 3.9.2.1 Hue
   - 3.9.2.2 Color
   - 3.9.2.3 Graphics
   - 3.9.2.4 Visual art
3. Theentire space is dictated by one color, with variations in tints, shades, saturation, and textures to add depth and variance
   - 3.9.3.1 Monochromatic Color Scheme
   - 3.9.3.2 Analogous Color Scheme
   - 3.9.3.3 Complementary Color Scheme

3.9.3.4 All of these

4. What do you need to see color?
   - 3.9.4.1 Light
   - 3.9.4.2 Object
   - 3.9.4.3 Observer
   - 3.9.4.4 All the above

5. The "visible spectrum" includes all the wavelengths of light that can be seen by the human eye. From the list below, select all of the phrases that describe this term.
   - 3.9.5.1 Electromagnetic energy between 400 and 700 nanometers
   - 3.9.5.2 A Rainbow
   - 3.9.5.3 Both
   - 3.9.5.4 None of these

6. In the subtractive model with the color, a combination of Yellow and Magenta produces:
   - 3.9.6.1 Red
   - 3.9.6.2 Green
   - 3.9.6.3 Blue
   - 3.9.6.4 White

7. Which Color combination produce maximum contrast?
   - 3.9.7.1 Blue – Green
   - 3.9.7.2 Red - Yellow
   - 3.9.7.3 Black- White
   - 3.9.7.4 All the above

8. In the additive model with the color, a combination of Red and Green produces:
   - 3.9.8.1 Cyan
   - 3.9.8.2 Magenta
   - 3.9.8.3 Yellow
   - 3.9.8.4 Black

9. Select one odd out among the followings in context to Printing.
   - 3.9.9.1 Green
   - 3.9.9.2 Cyan
   - 3.9.9.3 Magenta
   - 3.9.9.4 White

10. When white light is made to fall on a prism, which color light deviates minimum?

3.9.10.1 Violet

3.9.10.2 Green

3.9.10.3 Red

3.9.10.4 Blue

3.10 SUMMARY

- To make any reproduction a visual copy is prepared showing various graphics in visual form and accordingly the production is scheduled. Colours play a vital role in preparing the artwork from the copy. Colours have psychological impact on human mind.While perceiving the colours, the additive and subtractive theories work. Additive theory works on the computer screen, projectors and human eyes and subtractive theory works for the printing works. A lot of care and attention is required while choosing colours for print production. Various colour schemes are used for different purposes and selection of colours is made as per the requirements. The use of white space, using proper colour scheme and using easy design help in print production to reach new dimensions.

3.11KEYWORDS

Copy: A single specimen of a particular book, record, or other publication or issue.

Visual Copy: A picture, piece of film, or display used to illustrate or accompany something is called visual copy.

Colour: Colour is the characteristic of visual perception described through color categories, with names such as red, orange, yellow, green, blue, or purple.

3.12 SELF-ASSESSMENT TEST

58. DefineVisual Copy.
59. Explainthe utilization of visual copy for reproduction.
60. Define Colour.
61. Explain differenttheories of colour
62. What do you mean Additive Colours?
63. Enumerate variousSubtractive Colours.
64. Delineate variouscolour schemes.
65. How to correctly utilize colours for reproduction.

66. How to utilize different colour schemes for graphic reproduction.

3.13 ANSWERS TO CHECK YOUR PROGRESS

1. a) Visual copy
2. b) Color
3. a) Monochromatic Color Scheme
4. d) All the above
5. c) Both
6. a) Red
7. c) Black- White
8. c) Yellow
9. d) White (Means unprinted: No color is there)
10. c) Red

3.14REFERENCES / SUGGESTED READINGS

1. https://plato.stanford.edu/entries/color/
2. https://en.wikipedia.org/wiki/Color
3. https://encyclopedia2.thefreedictionary.com/
4. https://www.ics.uci.edu/~majumder/vispercep/chap6notes.pdf
5. https://opentextbc.ca/graphicdesign
6. https://drmg.com/2017/07/07/9-design-rules-creating-effective-print-ads/
7. https://www.iec.ch/colourmanagement/colour_reproduction/
8. https://www.nde-ed.org/EducationResources

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: MR. VIKAS JANGRA
LESSON NO.: 8	VETTER: MR. AROHIT GOYAT
PRINTING PAPER, COSTING AND ESTIMATION	

STRUCTURE

15.1 LEARNING OBJECTIVES

After going through this lesson, you will be able to:

- **15.1.1 Understand about Printing Paper and its types.**
- **15.1.2 Determine thePackaging Paper and its types.**
- **15.1.3 Acquaint about Costing and Estimation.**
- **15.1.4 Determine how to find the Cost of Paper.**

15.2 INTRODUCTION

Paper is an intermeshed sheet of fibers aligned in a particular direction. It is made up of cellulose fiber. This thin sheet is produced by either mechanical or chemical or thermochemical processing of cellulose fibres. These fibres are derived from wood, rags, grasses or other vegetable sources in water. First and foremost stock is prepared from various origins and then processed through various stages in order to prepare paper. Then draining the water through fine mesh leaving the fibres evenly distributed on the surface, followed by pressing and drying.

15.3PRINTING PAPER

Printing paper is supplied in many different forms and types. Each one of them offers different utility and benefits. Some of the most popular types of printing paper are enlisted as below: -

i. **Gloss Coated Paper:**This paper has high shiny appearance and commonly used for flyers and brochures. It also offers good ink drying properties.

ii. **Matt Coated Paper:** This paper is coated but offers matt finish to produce a paper that isn't shiny, preventing glare and used for reports, flyers and leaflets.

iii. **Recycled Paper:**As the name suggests. It is made from recycled fibers of paper. It is perfect alternative to reduce environmental impact due to paper manufacturing. It can be used for most documents including reports, memo paper and forms.

iv. **Uncoated paper:**Uncoated paper has no coating and excellent for ink receptivity and absorbency. Typically used in most office printers. Ithas the advantage of being used by both printer and pen, ideal for forms, letterheads and memo paper.

v. **Watermarked Paper:**It consists of watermark which is made by application of dandy roll while paper manufacturing. It is high quality watermarked paper give a feel of luxury. This type of paper is commonly used as a security feature for important documents, including exam certificates.

vi. **Inkjet Printer Paper:** This type of paper is designed for specific use with inkjet printers. There are different forms of inkjet paper which work well with inkjet ink, including photo, glossy, business card, and greeting card variants.

vii. **Laser Printer Paper:** Laser paper is best used with a laser printer. This is used more in business environments for tasks such as printing documents, cheques, and mailing labels.

viii. **Bright White:** Bright white paper sheets are much smoother and are non-textured, which makes them ideal for high-quality, presentable double-sided printing. The brightness of the paper ensures that both sides can be printed on without the ink showing through on the other side.

8.2.1 PACKAGING PAPER

In order to meet market needs wide variety of papers and paperboards are commercially available for the purpose of packaging. These choices includes virgin, recycled, bleached and unbleached paper. To meet the requirements of packaging sector, paper and board-based products are available in a wide range of grammage(GSM) and thicknesses. The surface finish is made while paper manufacturing. Additives are added while stock preparation stage provide in order to induce special properties/characteristics. Some common types are illustrated as below:-

i. **Wet strength paper:**This type of paper sacks used in wet conditions need to retain around 30% of their dry strength when saturated with water. In order to achieve wet strength, urea

formaldehyde and melamine formaldehyde are added. These chemicals are cross-linked during drying and deposited on the surface of the cellulose fibres and making them water resistant.

ii. **Glassine:** This is a super calendared (SC) greaseproof paper. Calendaring is made to produces a very dense sheet with a high glossy finish. Due to non-porous nature it can be laminated to board. Glassine is also available in wide variety of colours.

iii. **Greaseproof:**During stock preparation, the hydration of fibres is made. It is carried out as a batch process and is known as beating. The fibres are treated in order to make them almost gelatinous.

iv. **Vegetable parchment:**Bleached chemical pulp is used to manufacture paper conventionally and then which is passed through a bath of sulphuric acid. Surfacecellulose is gelatinized on passing into water and redeposited between the surface fibres which results information of an impervious layer. Such type of paper has high grease resistance and wet strength.

v. **Tissues:** Neutral pH grades with low chloride and sulphate residues are used for purpose of lamination to aluminum foil. The common GSM range from 17 - 30 g/m^2. Tissues are also used for tea and coffee bag. These tissues are light weight tissue available either as a heat sealable product or as a non-heat sealable product. It incorporates long fibres, such as those derived from manilla hemp, which give a strong permeable sheet at the low grammage used. Almost 100% biodegradable and compostable tea and coffee bag tissue are now available which are suitable for tea and coffee, packing machines.

8.2.2 PAPER SIZES

Paperare manufactured in a continuous reel and cut into sheets of required size. Theconventional and metric paper sizes basically depends upon the width of the reel. Handmade paper are not manufactured according to particular set standard size.

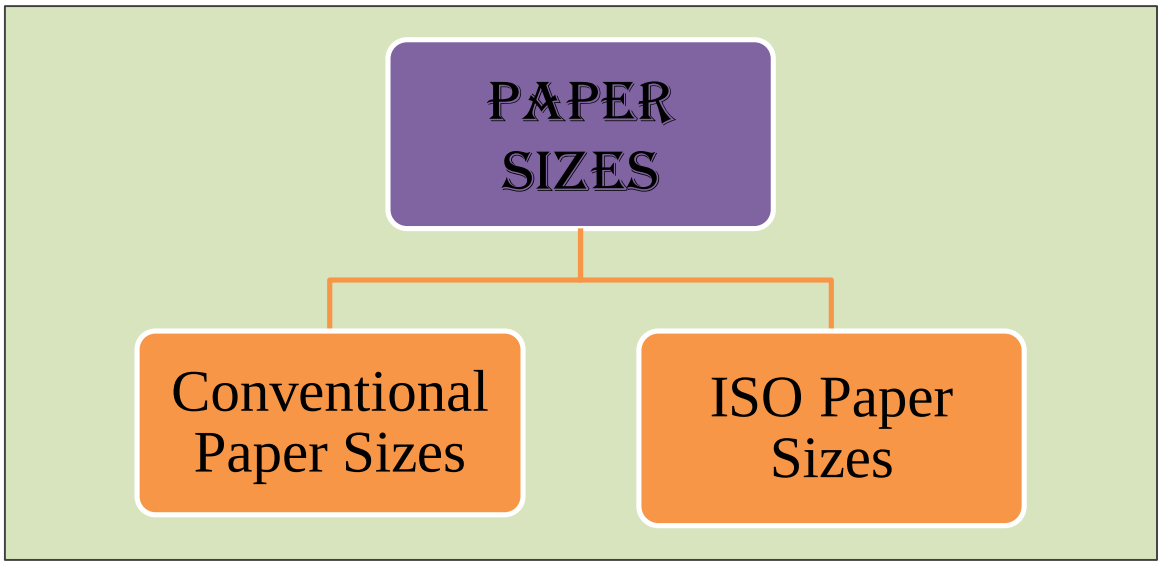


Figure: Classification of Paper Sizes

a. Conventional Paper Sizes: These are existing traditional paper sizes also known as 'conventional paper sizes'. These are also being used in India. The dimensions of these papers are in inches. According to their sizes they are designated by different names. The basic sizes of the paper are called 'Broad sizes', i.e. without any subdivision. The conventional papers with their sizes are enlisted as below:-

Paper	Size in inches	Paper	Size in inches
Small Foolscap	13 ¼ x 16 ½	Medium	18 x 23
Foolscap	12 ½ x 17	Small Royal	19 x 24
Post	15 ½ x 19	Royal	20 x 25
Crown	15 x 20	Royal Elephant	20 x 27
Large Post	16 ½ x 21	Large Royal	20 ½ x 27
Demy	17 ½ x 22 1/2	Imperial	22 x 30

Table: Conventional Paper Sizes

The **subdivisions** of the conventional paper sizes are indicated by folio, quarto, octavo (8vo), sixteenmo (16mo), 32mo and so on. The regular subdivisions are obtained by making half of the longer side (edge) of the paper each time as shown below:

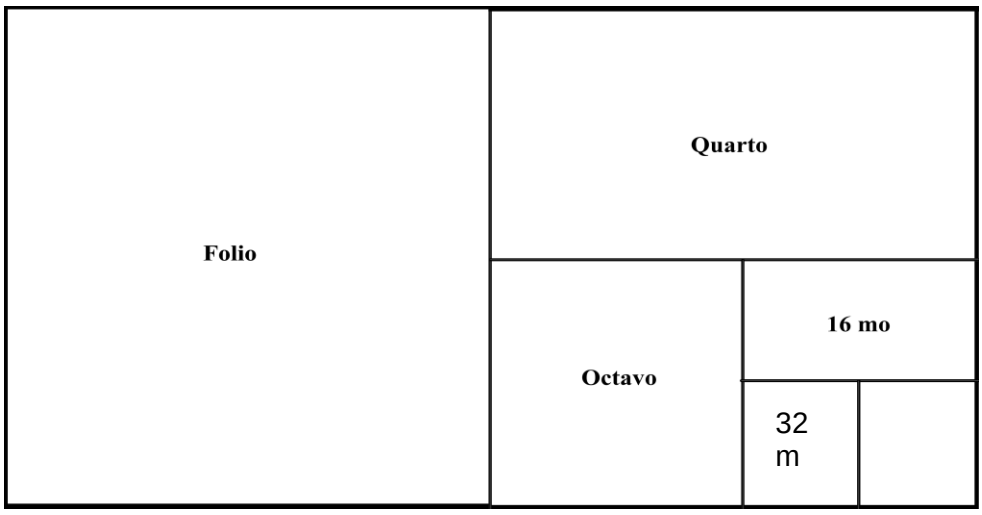


Figure: Regular Subdivisions of Conventional Paper Sizes

The irregular subdivisions of conventional paper sizes are designated by long folio, long quarto, long octavo and so on. The irregular subdivision of paper is obtained by making half of the shorter edge of the paper as indicated:

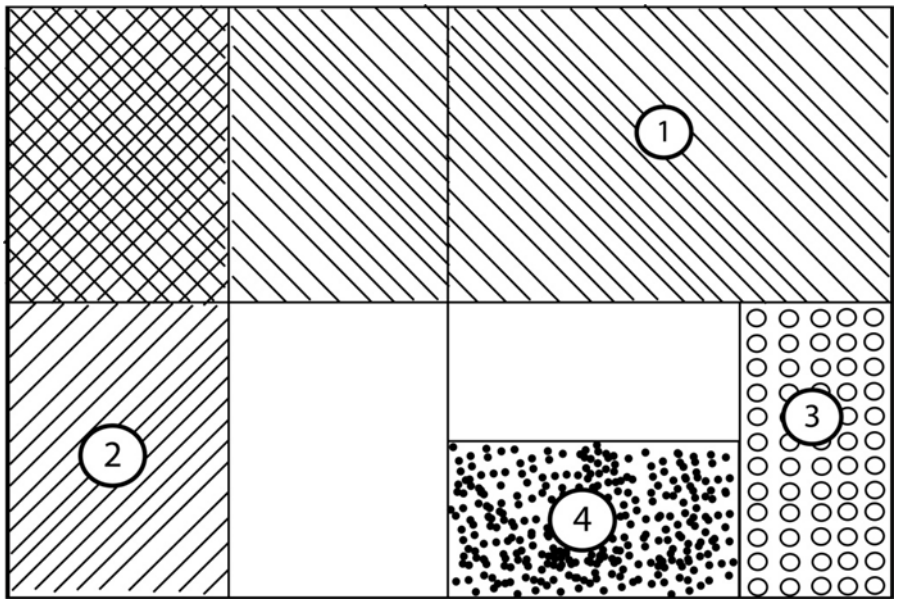


Figure: Irregular Subdivisions of Conventional Paper Sizes

b. ISO Paper Sizes: These are the international standard sizes of papers commonly known as ISO sizes. These sizes are also called Metric paper sizes.In metric system, the dimensions of the papers are indicated in millimetres andbasic weight i.e. substance of the paper is expressed in GSM (grams per square meter expressed in g/m2). The ISO sizes and DIN (Deutsche InternationaleNormen, that is, German International Standard) sizes developed by Germany are the same. Commonly found grammage of papers are 25, 30, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125 GSM, and so on. The international paper sizes include three paper series namely

i. A-Series
ii. B-Series
iii. C-Series.

The basic or broad sizes in these series are A0, B0, and C0 and the '0' mentioned in the series indicates that the paper is without any sub-division.The A-series is used for general printing purposes including stationary and publications. The B-series is primarily for posters and wall charts and C-series is for the making of envelopes. These are the recommendations made by the bureau of Indian Standards. However, in common practice the printers and publishers are using all the three series of paper for publications for creatinga variety in the sizes of books and other publications. The interesting fact about the metric sizes is that the proportion of sides of all the basic sizes and their regular sub-divisions remains the same and is equal to 1: $\sqrt{2}$ shown as:

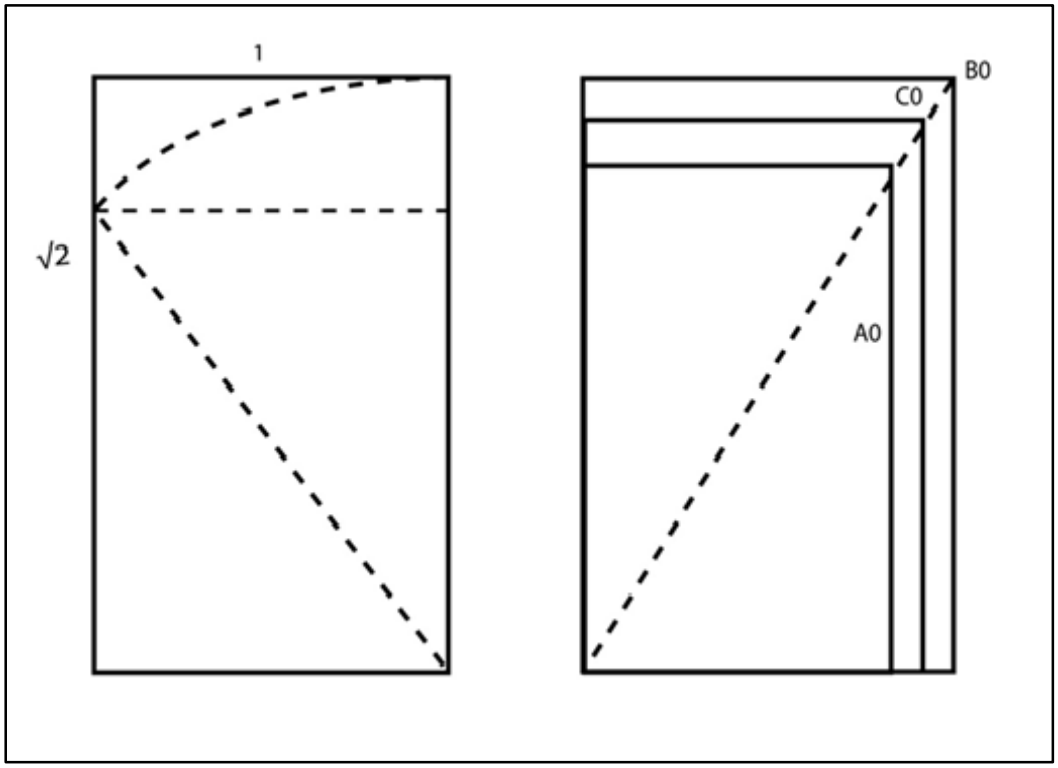


Figure: Proportion of Basic size's (A,B and C-series) sides

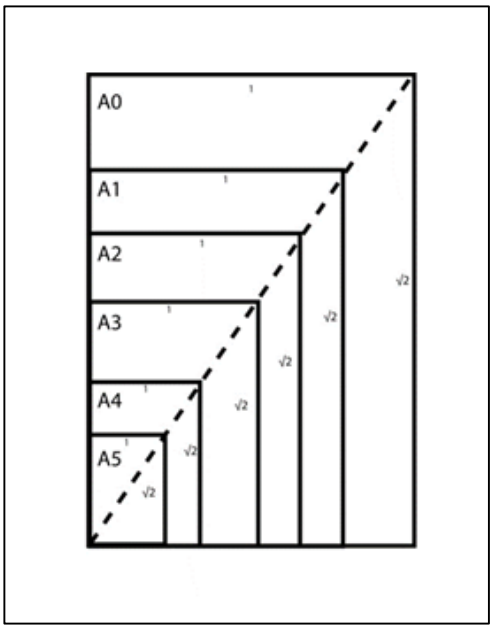


Figure: Proportion of regular subdivision of A - series sides

Multiple Sizes: In order to have double size of (A0, B0 and C0), the shorter dimension is multiplied by 2 and in consequences a prefix 2 is mentioned before the size e.g. 2B0 = 1414*2000 mm and quadruple is denoted by prefix 4 i.e. 4B0 = 2000*2828 mm.

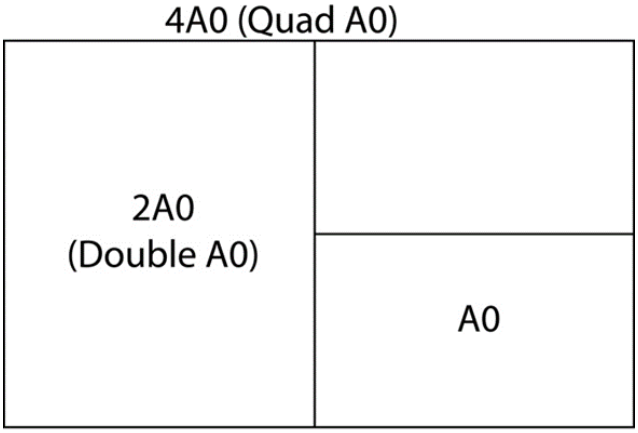


Figure: Multiple Sizes

Regular Subdivisions: Subdivision of these paper series are denoted by writing figures 1,2,3,4 and so on suffixed to the series. Subdivision of A series are A1, A2 and A3 so on. This regular subdivision is made by dividing longer side by 2.

c. Regular Subdivisions of A - Series , B - Series and C - Series: Sizes of regular subdivisions of A - Series , B - Series and C – Series are enlisted as below:

- **A-Series:** Subdivision of A series are made by dividing longer side by 2 and denoted by A1, A2, A3 and A4 so on. The list of the regular subdivisions of A – Series is enlisted as below:

Size	Width x Height (mm)	Width x Height (in)
A0	841 x 1189 mm	33.1 x 46.8 in
A1	594 x 841 mm	23.4 x 33.1 in
A2	420 x 594 mm	16.5 x 23.4 in
A3	297 x 420 mm	11.7 x 16.5 in
A4	210 x 297 mm	8.3 x 11.7 in
A5	148 x 210 mm	5.8 x 8.3 in
A6	105 x 148 mm	4.1 x 5.8 in
A7	74 x 105 mm	2.9 x 4.1 in
A8	52 x 74 mm	2.0 x 2.9 in
A9	37 x 52 mm	1.5 x 2.0 in
A10	26 x 37 mm	1.0 x 1.5 in

Table: A- Series sizes

ISO Stock Paper Sizes

For Normal Trim	For Extra Trim or Bled Work
RA0 = 860 x 1220 mm	SRA0 = 900 x 1280 mm
RA1 = 610 x 860 mm	SRA1 = 640 x 900 mm
RA2 = 430 x 610 mm	SRA2 = 450 x 640 mm

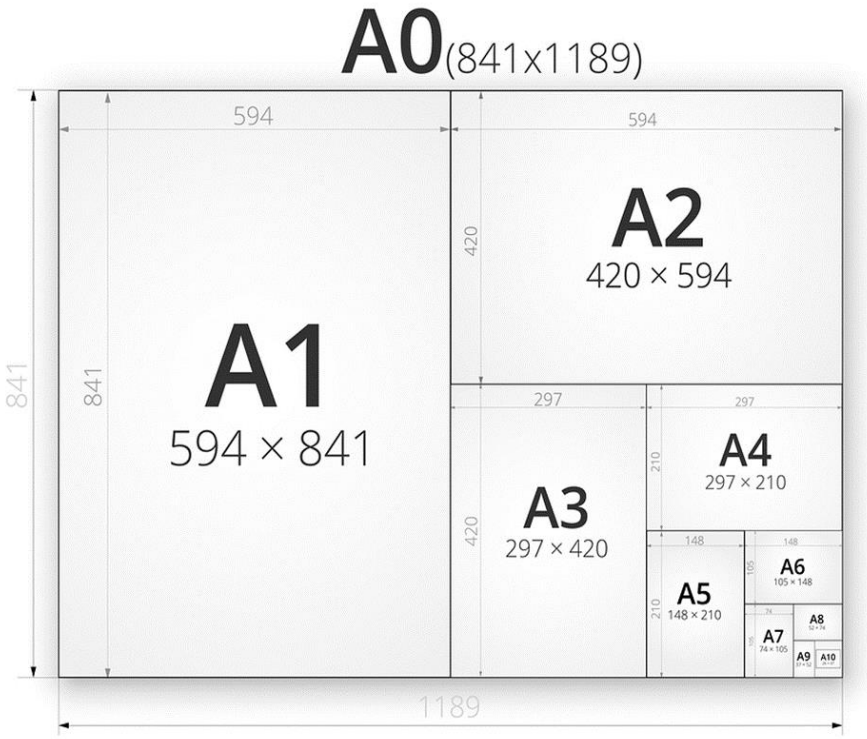


Figure: Subdivisions of A - Series paper

- **B-Series:** Subdivision of B series are made by dividing longer side by 2 and denoted by B1, B2, B3 and B4 so on. The list of the regular subdivisions of B – Series is enlisted as below:

Size	Width x Height (mm)	Width x Height (in)
B0	1000 × 1414 mm	39.4 × 55.7 in
B1	707 × 1000 mm	27.8 × 39.4 in
B2	500 × 707 mm	19.7 × 27.8 in
B3	353 × 500 mm	13.9 × 19.7 in
B4	250 × 353 mm	9.8 × 13.9 in
B5	176 × 250 mm	6.9 × 9.8 in
B6	125 × 176 mm	4.9 × 6.9 in
B7	88 × 125 mm	3.5 × 4.9 in
B8	62 × 88 mm	2.4 × 3.5 in
B9	44 × 62 mm	1.7 × 2.4 in
B10	31 × 44 mm	1.2 × 1.7 in

Table: B- Series sizes

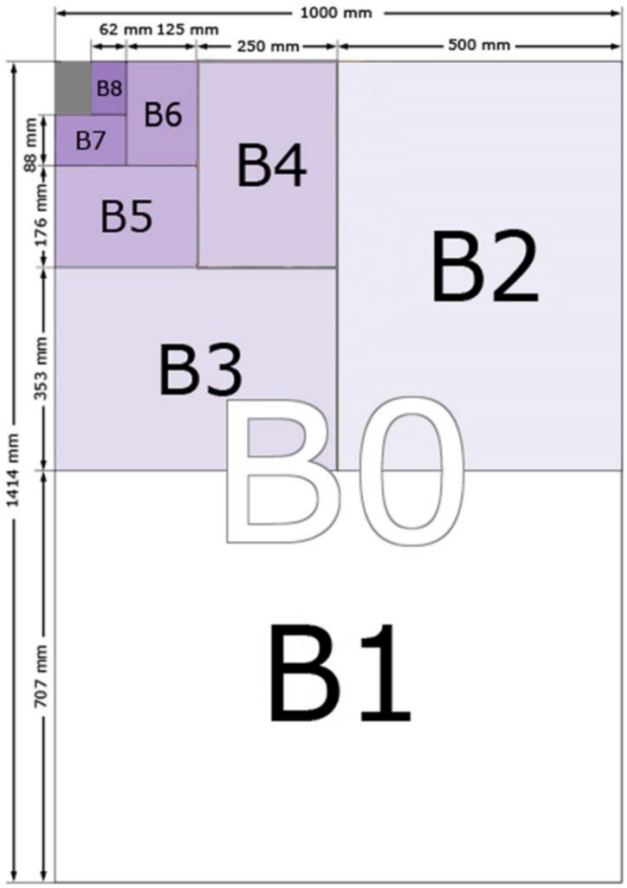


Figure: Subdivisions of B - Series paper

➢ **C - Series:** Subdivision of C series are made by dividing longer side by 2 and denoted by C1, C2, C3 and C4 so on. The list of the regular subdivisions of C – Series is enlisted as below:

Size	Width x Height (mm)	Width x Height (in)
C0	917 × 1297 mm	36.1 × 51.1 in
C1	648 × 917 mm	25.5 × 36.1 in
C2	458 × 648 mm	18 × 25.5 in
C3	324 × 458 mm	12.8 × 18 in
C4	229 × 324 mm	9 × 12.8 in
C5	162 × 229 mm	6.4 × 9 in
C6	114 × 162 mm	4.5 × 6.4 in
C7	81 × 114 mm	3.2 × 4.5 in
C8	57 × 81 mm	2.2 × 3.2 in
C9	40 × 57 mm	1.6 × 2.2 in
C10	28 × 40 mm	1.1 × 1.6 in

Table: C- Series sizes

d. Advantages of ISO Paper Sizes: The ISO or metric paper sizes have a lot to offer numerous advantages over the conventional sizes. Some of these are enlisted as below:

i. The basic weight i.e. substance of paper is more accurately expressed in g/m2 (grams per square meter) than in pounds per ream.
ii. This GSM applies equally to all kinds of papers irrespective to series.
iii. The regular subdivision of ISO paper sizes eliminates the ambiguity of subdivision.
iv. Due to limited number of paper sizes, matric sizes have rationalized the existing paper sizes.
v. Calculation related to paper have become easier comparatively.
vi. Limited paper sizes have also reduced the storage, inventory control problems to a large extent.
vii. Equivalent paper finding have become easy due to common unit of paper measurement.
viii. Due to international acceptance of size, a global coordination have become easier for printing and publishing arena.

1. COSTING AND ESTIMATION

Costing and estimating are the two essential departments of any printing organization. The main objective of the estimating department is to prepare quotations for various printing jobs which the press wishes to undertake. It is supposed to be the key department in a printing press because all the business entirely dependents on the effectiveness of estimating department. On the other hand, the costing department works out the actual cost of production of the jobs executed by the press in order to find out the extent of overall profit or loss to the organization. Costing department helps the management to exercise control over costs of the future jobs by avoiding the waste of time and material spent in doing a job.

Costing: It is the technique of finding out the actual cost of production or rendering any service scientifically. By other means it is method of finding out cost in accordance with some scientific principles of costing. In order to run any business successfully, profit is the life blood for any organization, hence it becomes important to know actual cost of production which is the main role of costing. This is done by applying scientific principles known as "Principles of Costing". The main advantages of costing are:

- It helps in determining the cost of each and every productive operation carried out.
- It helps to access the actual profit or loss made by any organization.
- It provides necessary information for wastage reduction.
- It provides necessary data required by estimation department to compare actual cost.

Estimating: It is the technique of accessing the sale price of a job or service scientifically. In other words, it forecasts about the sale price before execution of the job. As it is forecast, hence it is

probability and not actual. This is also known as 'advance costing' or 'standard costing'. Here advance is denoted that it is calculated before execution of job. The accuracy and methodology adopted for estimation determines the effectiveness of any estimation department.

2. COSTING AND ESTIMATION OF PAPER

'Paper' refers to various varieties of stocks used for numerous purposes like printing, packing, wrapping and processing. The basic weight or substance of paper is generally expressed in gram per square meter, GSM. Different variety of papers are available in different GSM. The basic weight of a paper determines the cost of paper. Paper is available in the market in conventional as well as metric sizes. The papers in conventional sizes have dimensions in inches whereas the metric size papers have dimensions in millimeters. Some of the conventional sizes of papers and their names by which they are designated are given below:

Paper	Size on Inches	App. Size in mm
Small Foolscap	13 ¼" x 16 ½"	336 x 419
Foolscap	13 ½" x 17"	342 x 431
Post	15 ½" x 19"	393 x 482
Crown	15" x 20"	381 x 508
Large Post	16 ½" x 21"	419 x 533
Demy	17 ½" x 22 ½"	444 x 571
Medium	18" x 23"	457 x 584
Small Royal	19" x 24"	482 x 609
Royal	20" x 25"	508 x 635
Royal Elephant	20" x 27"	508 x 685
Imperial	22" x 30"	568 x 762

Table: Conventional Paper Sizes

i. **Cost of Paper:** A ream consist of 500 sheets of paper. So in order to find out the cost of single sheet or paper cost per sheet formula is given as below:

Paper cost per sheet:

Cost per ream (500 sheets) / number of sheets = cost per sheet

ii. **Number of Sheets Required for Job:** In a pile the total weight of paper is equal to the product of the paper substance (GSM), area of one sheet (square meters) and the number of sheets contained in a pile. Therefore

$$W_{tN} = \frac{GSM \times A \times N}{1{,}000}$$

Where

- W_{tN}= Weight of "N" number of sheets in kilograms
- GSM = Substance of paper (grams per square meter)
- N = Number of sheets in the pile.

A printer's ream consists of 500 sheets. If weight of one ream of paper i.e. Wt 500 consisting of 500 sheets is to be calculated, then the above formula can be further simplified by putting N = 500. Therefore

$$W_{t500} = \frac{GSMx\ A \times 500}{1{,}000}$$

$$W_{t500} = \frac{GSM}{2} \times A$$

Formula: Weight of ream

Question: Find out the weight of one ream of paper of 80 GSM in double medium size.

Solution:

Wt500 = to calculate? GSM = 80 (given)

Medium size = 18" x 23" Double Medium size = 23" x 36"

Area = 23" x 36"

= 584 mm x 914 mm

= 0.584 x 0.914m^2

$$W_{t500} = \frac{GSM}{2} \times A$$

$$W_{t500} = \frac{80}{2} \times 0.584 \times 0.914$$

$$= 21.35\ kg$$

iii. Equivalent Weight of Paper: If weight of paper in a particular size is given and its equivalent weight in any other size in the same substance is to be determined then the formula will be:

$$W_D = \frac{W_G \times A_D}{A_G}$$

Where

- W_D = Weight of paper to be determined
- A_D = Area of paper of which weight is to be determined
- W_G = Weight of the given paper, and
- A_G = Area of the given paper
- The unit of basic weight and measurement in both the cases should be the identical.

Question: A ream of paper in 61 x 88 cm size weighs 21.5 kg. Find out the weight of the same paper in quad crown size.

Solution:

W_D =? W_G = 21.5 kg

A_G = 61 x 88 cm A_D = 30" x 40" = 72.2 x 101.6 cm

$$W_D = \frac{W_G \times A_D}{A_G}$$

$$W_{t500} = \frac{21.5 \text{ kg} \times 72.2 \times 101.6 \text{ cm}}{61 \times 88 \text{ cm}}$$

$$= 29 \text{ kg.}$$

iv. To find the roll weight: In order to find out the weight of roll, the formula is as below:

$$\text{Roll Weight} = [(\text{Roll Diameter}^2) - (\text{Core Diameter}^2)] \times \text{Roll Width} \times \text{Factor}$$

Question: Find the weight of a roll of forms bond paper with a roll diameter of 40 inches, a core diameter of 3 inches, and a roll width of 17.5 inches.

Solution:

We know:

Roll Weight= [(Roll Diameter²) - (Core Diameter²)] x Roll Width x Factor

Putting the given value in the formula we have:

Roll Weight = [(40 x 40) - (3 x 3)] x 17.5 x .021

= 585 lbs

v. **To find the length of the Web:** In order to find out the length of web the formula isas below:

$$\text{Length} = \frac{W \times 1000}{\text{Gsm} \times \text{Rwd}}$$

Where,

W - Weight of reel in kg
Gsm - g/m² of paper
Rwd - Width of reels in m
D - External diameter of reel in mm

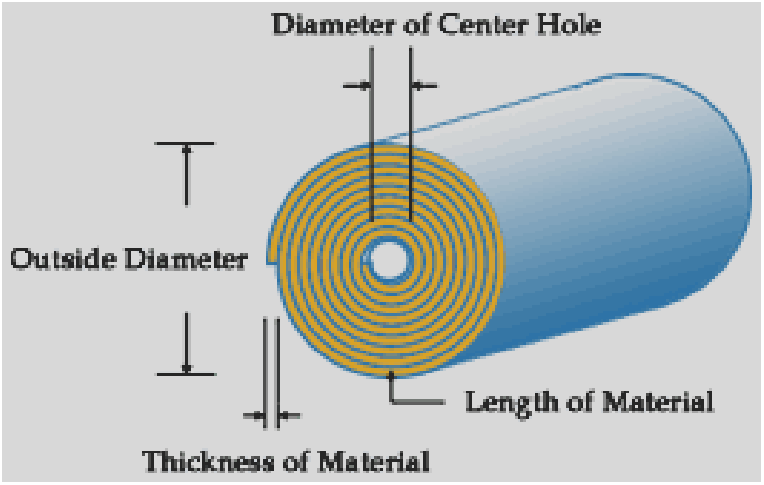


Figure: Structure of Web or Roll

8.3 CHECK YOUR PROGRESS

1. Which of the following is categorized under the category of Printing Paper?

a) Glassine
b) Tissues
c) Watermarked Paper
d) All the above

2. Which of the following is categorized under the category of Packaging Paper?

a) Greaseproof

b) Watermarked Paper

c) Laser Printer Paper

d) Recycled Paper

3. Which of the following is classified under the category of 'Paper Sizes'?

a) ISO Paper Sizes

b) Conventional Paper Sizes

c) Metric Paper Sizes

d) All of the above

4. The **subdivisions** indicated by folio, quarto, octavo (8vo), sixteenmo (16mo), 32mo and so on are the **subdivisions** of the _____ paper sizes.

a) ISO Paper Sizes

b) Metric Paper Sizes

c) Conventional Paper Sizes

d) All of the above

5. Which of the followings aretypes of ISO Paper Sizes?

a) A-Series

b) SRA0 Size

c) RA0

d) All of the above

6. The dimensions **'841 x 1189mm'** represents:

a) C-Series

b) B-Series

c) A-Series

d) All of the above

7. The dimensions of B0 series is:

a) 841 X 1189 mm

b) 860 x 1220 mm

c) 917 × 1297 mm

d) 1000 × 1414 mm

8. Which one of the following represents A4 size dimensions?

a) 229 × 324 mm

b) 250 × 353 mm

c) 210 x 297 mm

d) 353 × 500 mm

9. Which of the following is also termed as 'advance costing'?

a) Costing

b) Estimating

c) Costing procedure

d)Costing and estimation

10. The size of 'Imperial Paper' is:

a) 19" x 24"

b) 15" x 20"

c)18" x 23"

d)22" x 30"

8.4 SUMMARY

- Printing paper is available in different forms and each one of them is have different utility. Printing paper includesGloss Coated Paper, Matt Coated Paper, Recycled Paper, Uncoated paper, Laser Printer Paper, Bright White etc.
- Wide variety of papers and paperboards are commercially available for the purpose of packaging. These choices includes virgin, recycled, bleached and unbleached paper. Packaging paper includes Wet strength paper, Glassine, Greaseproof, Vegetable parchment etc.
- Paper are manufactured in a continuous reel and cut into sheets of required size. Paper types includes conventional and metric paper sizes.
- It is the technique of finding out the actual cost of production or rendering any service scientifically. By other means it is method of finding out cost in accordance with some scientific principles of costing.
- It is the technique of accessing the sale price of a job or service scientifically. In other words, it forecasts about the sale price before execution of the job. As it is forecast, hence it is probability and not actual. This is also known as 'advance costing' or 'standard costing'.

8.5 KEYWORDS

Paper Sizes: Paper are manufactured in a continuous reel and cut into sheets of required size. Paper types includes conventional and metric paper sizes.

Conventional Paper Sizes: These are existing traditional paper sizes also known as 'conventional paper sizes'. These are also being used in India. The dimensions of these papers are in inches.

Subdivisions of Conventional Paper sizes: The subdivisions of the conventional paper sizes are indicated by folio, quarto, octavo (8vo), sixteenmo (16mo), 32mo and so on. The regular subdivisions are obtained by making half of the longer side (edge) of the paper each time.

Irregular subdivisions: The irregular subdivisions of conventional paper sizes are designated by long folio, long quarto, long octavo and so on. The irregular subdivision of paper is obtained by making half of the shorter edge of the paper.

ISO Paper Sizes: These are the international standard sizes of papers commonly known as ISO sizes. These sizes are also called Metric paper sizes. In metric system, the dimensions of the papers are indicated in millimetres and basic weight i.e. substance of the paper is expressed in GSM (grams per square meter expressed in g/m^2).

ISO paper sizes includes three paper series namely A-Series, B-Series and C- Series and the basic size denoted by A0, B0 and C0 respectively.

In case of the metric sizes the proportion of sides of all the basic sizes and their regular sub-divisions remains the same and is equal to 1: √2.

Regular Subdivisions: Subdivision of these paper series are denoted by writing figures 1,2,3,4 and so on suffixed to the series. Subdivision of A series are A1, A2 and A3 so on. This regular subdivision is made by dividing longer side by 2.

Multiple Sizes: In order to have double size of (A0, B0 and C0), the shorter dimension is multiplied by 2 and in consequences a prefix 2 is mentioned before the size e.g. 2B0 = 1414*2000 mm and quadruple is denoted by prefix 4 i.e. 4B0 = 2000*2828 mm.

Costing: It is the technique of finding out the actual cost of production or rendering any service scientifically. By other means it is method of finding out cost in accordance with some scientific principles of costing.

Estimating: It is the technique of accessing the sale price of a job or service scientifically. In other words, it forecasts about the sale price before execution of the job. As it is forecast, hence it is probability and not actual. This is also known as ‘advance costing’ or ‘standard costing’.

8.6 SELF-ASSESSMENT TEST

67. Define Paper, Printing paper, Packaging paper and its type.
68. What do you mean by Paper Sizes? How their classification is made.
69. Elaborate Conventional Paper Sizes in detail.
70. How do we classify ISO Paper Sizes?
71. Define A - Series, B - Series and C – Series. How their regular subdivisions is made.
72. Delineate various advantages of ISO Paper Sizes
73. Define Costing and Estimation.
74. Howto find Cost of Paper?
75. Write a formula for finding‘Number of Sheets Required for Job’.
76. Write a formula for finding ‘Equivalent Weight of Paper’.
77. Howto find the roll weight?

78. Explain in detail for finding length of the Web.

8.7 ANSWERS TO CHECK YOUR PROGRESS

1. Watermarked Paper
2. Greaseproof
3. All of the above
4. Conventional Paper Sizes
5. All of the above
6. A-Series
7. 1000 × 1414 mm
8. 210 x 297 mm
9. Estimating
10. 22” x 30”

8.8 REFERENCES/SUGGESTED READINGS

1. http://www.internationalpaper.com
2. https://blog.pdf2go.com/2016/10/05/all-you-need-to-know-about-paper-sizes
3. papersizes.io
4. Paper and Paperboard Packaging M.J. Kirwan
5. Printing Press Management, by M. Pugazh,, Dr.M. Nandakumar
6. Binding and Finishing Processes, by B D Mendiratta

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: MR. ABHISHEK SAINI
LESSON NO.: 9	VETTER: MR. AROHIT GOYAT
PRINT PUBLICATIONS-I	

STRUCTURE

22.1 LEARNING OBJECTIVES

After going through this lesson, you will be able to:

- **Define Print publications.**
- **Identify different Print Publication like leaflets, Booklets, Brochures and posters.**

22.2 INTRODUCTION

Print is usually applied to text, images, or other visual content on any traditional medium, including paper (Leaflets, Booklets, Broachers, newspapers, Posters, Books, Folders, packagers, etc.) to convey a message. The word publication means the act of publishing, and also refers to any printed copies. Print media includes those media of communication which are controlled by space rather than time. It can be read at any available time and can be kept record.

22.3 PRINT PUBLICATIONS

Various print publications includes Leaflets, Booklets, Broachers, Newspaper, Posters, Books, Folders,

and Packagers so on. These offers numerous advantages (Pros) and disadvantages (Cons) which are enlisted as below:

ADVANTAGES

- The technology for print publications does not change at such a fast pace as online resources.
- Print publications can reach target audiences who have limited or no internet access.
- It gives a high intense reach to the public.

DISADVANTAGES

- More time is associated with printing and production of printed publications so it is not suitable for high risk, urgent public health announcements.
- Magazines aim for one particular target, while online is able to reach all.
- Online publications can have millions of visitors because they are usually free and may potentially reach everyone with internet access. Print depends on payments and subscriptions, therefore reaching far less customers.

9.2.1 LEAFLETS

A printed sheet of paper (small sheet, flat or folded,) containing information or advertising and usually distributed free. Sometimes it may be called as Flyer though leaflets are the superior in quality when compared to flyers. Leaflets are one single piece of paper that is generally 8.5 inches x 11 inches. Generally both sides of the paper advertise the subject.

Leaflet

PARTS OF LEAFLETS

Various parts of a leaflet are explained as below:-

i. **Headline**: Headline must capture attention and clearly communicate a simple message. The inclusion of benefits (i.e.: fast-acting, powerful etc.) can make a headline more compelling.

ii. **Sub-Headline**: Sub-headline should support the headline with additional information and function as a catalyst for the recipient to learn more.

iii. **Limited/Exclusive Offer:** A limited time or exclusive offer will make the recipient feel special and encourage them to make a purchasing-decision more quickly. In nearly all cases, leaflets will benefit tremendously from the inclusion of a strong offer.

iv. **Testimonial:** Always include at least one testimonial from a "real" satisfied consumer or customer. Where possible, include an image of the person featured in the testimonial that is similar to your target demographic.

v. **Image/Product Shot:** Images communicate concepts and information at the speed of light. It is critical that you include high-quality photos or product shots that look professional, add value to your leaflets. In most cases, an actual product shot or image(s) of people that correlate to your message, are recommended.

vi. **List of Benefits:** Always clearly list the features or benefits of your product or service. Check marks usually outperform bullet points, and provide a functional way of displaying concise information. All important benefits or features should be listed to maximize performance.

vii. **Call-to-Action (CTA):** Tell the recipient exactly what you want them to do. Whether your CTA is a phone call, a website visit, or something else - your CTA should be clear, bold, and a central focus of your leaflet design.

Parts of leaflet

TYPES OF LEAFLETS

i. **Single sheet:** The simplest form of leaflet marketing, one single sheet of A5 is also the most common. Designed to get your information to people in the minimum time possible to keep their attention, you can print on one or both sides of the paper.

ii. **Single fold:** Using a sheet of A4, with a single fold to turn it into an A5 sized booklet, this is an effective way of getting a bit more marketing information to your customer.

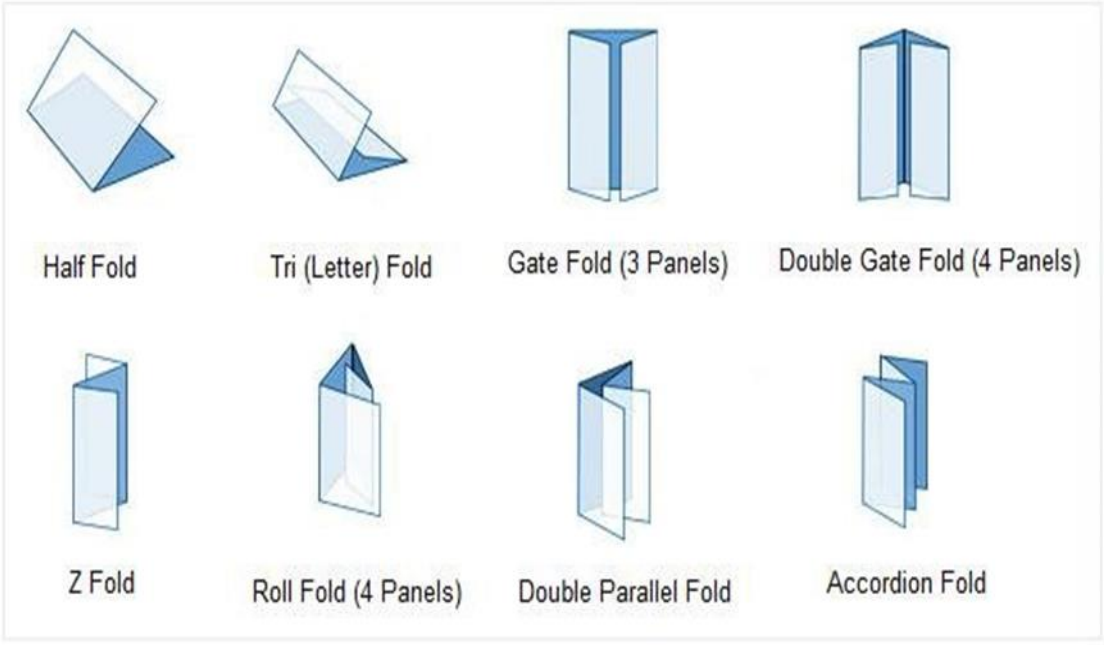
iii. **Concertina fold:** Creating a zig-zag, or Z fold, with your sheet of paper, this gives you six panels to use for your advertising.

iv. **Cross fold:** Pocket size, portable promotion, perfect for the reader on the go, the cross fold is a sheet of paper folded multiple times, a bit like London tube maps.

v. **Open gate fold:** Fantastic for a big reveal, these will take the form of a rectangular strip of paper, divided into thirds. The outer two sections are folded in, one at a time, providing an effective cover for the key information which the reader will see in the central section.

vi. **Closed gate fold:** Similar to the open gate fold, the closed gate fold is particularly effective for invitations and brochures. The open gate fold is folded one more time in the center of the main panel, meaning the leaflet opens up in a booklet form.

vii. **Roll fold:** Similar to the Z fold, this design features panels which fold into the middle of the leaflet. Six panels is the most common, but you can also roll fold eight panels.



Different formats of leaflets

9.2.2 BOOKLETS

A booklet is a small book—with fewer pages and smaller dimensions than a "real" book, and usually a paper cover. Booklets are supremely multi-functional and perfect for story books, instruction guides, reports, product promotions, school projects, event programs, marketing collateral and recipe collections. In the digital age, the attention span of most readers has decreased; booklets make it easy for you to capture and promote your content succinctly and attractively, quickly and cost-effectively. A booklet is with each page usually being 5.5 inches x 8.5 inches.

A booklet is usually a thin, saddle-stitched book with less than 96 inside pages with a paper cover. One can choose a self-cover booklet, where the cover is the same paper as the inside pages, or pick a plus cover which has a little bit heavier card stock. There are many great custom options when it comes to building the best booklet.

Booklet

PARTS OF A BOOKLET

i. **Headings:** are used to help readers find their way around your booklet.
ii. **Subheads:** serve to guide the reader through the text, and to help cast light on the author's way of thinking about their subject.
iii. **The body text or body copy:** is the text forming the main content of a book
iv. **Pictures:**Images will help your next promotional stand out and have a great impact with your customers.

TYPES OF BOOKLET

- **Newsletter:** Companies have started using a booklet as a newsletter where the customers get to know about the company, what is happening in it and any new amendments or policies. It is a great way to instil trust in the customers and form a stronger bond.
- **Recipe booklets:** Such booklets contain recipes in short yet descriptive version. These are usually designed by chefs, companies selling cookery items or ingredients.
- **Instruction Manual:**It also known as owner's manual. It contains important information about a product like how to assemble it, dismantle it, installation process, safety instructions, warranties and guaranties.
- **Portfolios:**Companies that are into creative work such as photography, interior designing or those who make tailored products need a portfolio booklet to showcase their art and proficiency to probable clients. The clients get a fair idea about the kind and style of work the company is into.
- **Reference Guide:**It is just like an instruction manual but a shorter form of that and contains the most essential information like key features, dos and don'ts etc.
- **Brochure booklet**: A brochure booklet contains description, information and pictures about a product.In the times of fierce competition, even the booklets need to be good in design as well as content. In fact, they need to be bound properly so that they are

user friendly and durable. There are different types of binding options available these days.

- **Saddle Stitched:**It is the most commonly used binding. It involves folding sheets that are assembled together one inside the other and then stapling through the fold line. It is a center binding and lets the booklet to open flat at the center.
- **Coil/Spiral Binding:**It is similar to saddle stitching but it requires making holes along the left corner of its pages and putting a metal or plastic wire through the holes.
- **Perfect Binding:** Instead of stapling or coiling, in this method the pages are pasted at the spine and the other three sides of the booklet are cropped to create a perfect look.

PURPOSE OF BOOKLETS

Booklets are supremely multi-functional and perfect for story books, instruction guides, reports, product promotions, school projects, event programs, marketing collateral and recipe collections. In the digital age, the attention span of most readers has decreased; booklets make it easy for you to capture and promote your content succinctly and attractively, quickly and cost-effectively.

i. To distribute valuable information to a conference or targeted group of people, like potential clients.
ii. To give clients, customers, or any passerby something physical to take home and refer to later.
iii. To show off on countertops, kiosks, or lobby rack displays.
iv. To give as gifts to family, customers, friends, or sponsors.
v. To assist your business by creating a sales book, product or service catalog, manuals and reference materials.
vi. To help organize large groups of information in a way that is simple and having visual appeal.
vii. To market and educate clients or future clients by mailing them directly.

ADVANTAGES

- Individualized learning.
- Makes mass education possible with high efficiency.
- Easy to transport.
- Commonly and constantly available.
- Allow self-pacing. Certain people who read-skim rapidly, using trigger word to read selectively and non-sequentially. Such processing cannot used with audio tapes.
- Can be reproduction in logical languages. Needs very little maintenance when compared with sophisticated aids.

- More efficient than oral languages (as a matter of fact that Print communicates better).
- Very flexible as a teaching aid since it can be used in whole or in part.
- Stimulates interest of reader.

DISADVANTAGES

- Some may throw it out.
- Storing is found to be difficult.
- Demands good typing.
- No group dynamics is encouraged.
- Can't be used for those who have not learned to read.
- Printed teaching material can be described as a frozen language that is selective in its description of reality.

9.2.2 BROCHURES

Brochures have no set size for a brochure, though they are typically larger than flyers. Brochures can be 8.5 inches x 11 inches although 8.5 x 14 is also popular. A brochure's structure makes it stand out as people can fold it into sections. Most brochures are dual-fold or trifold, with different information on each side. This allows them to be folded and stored conveniently. Brochures can also stand on a tabletop or desk when kept open.

Brochure

PARTS OF A BROCHURE

i. **Name and Logo:** Your business's name and logo are the building blocks your brochure should be designed around. Your logo be memorable, bright and consistent between all of your marketing endeavors because this element is what your customers are most likely to remember and to look for when driving past your place of business. Your logo and name should be displayed on the brochure in a prominent position and on the front and back covers if possible.

ii. **Brochure Cover:** The cover image should make people want to own a piece of the dream you are advertising. If the brochure is showcasing a vacation destination, choose an image that makes the destination look both exotic and inviting. If the brochure is selling a product, pair the product with high-dollar merchandise.

iii. **Slogan:** Your slogan is a way to impart the basic philosophy of your company in a tagline. It can be displayed on the front cover, at the bottom of the cover image, at the top of the back cover or in slightly larger print inside the brochure. Whatever the case, select a quote that is representative of your product or service and that is short and catchy. The slogan should be a hook that is memorable or witty.

iv. **Main Text:** Your main text is found in the center of the brochure, and it contains all of the relevant product or service information. You should include pricing information and a product guide. If you are marketing a trip, list the destinations and outings. If you are marketing a product line, list the types of product you are selling, and give a synopsis of each.

v. **Contact Information:** This is, perhaps, the single most important element to get right on your brochure. Without this piece, it will be impossible for consumers to reach you about your product or service. List your business's name, your name, an address, a phone number, an email and a website, if available. It is wise to put this information both on back cover of the brochure and on the inside near the main text.

TYPES OF BROCHURES

- Gate Fold Brochures
- Bi-Fold Brochures
- Tri-Fold Brochures
- Flyers or Leaflets
- Folders and Insert Brochures
- Z-Fold Brochures

ADVANTAGES

I. Brochures Are Easy to Distribute
II. Brochures Are Cost Effective
III. Brochures Build Trust
IV. Brochures Hold Lots of Information
V. Brochures Personalize Your Business

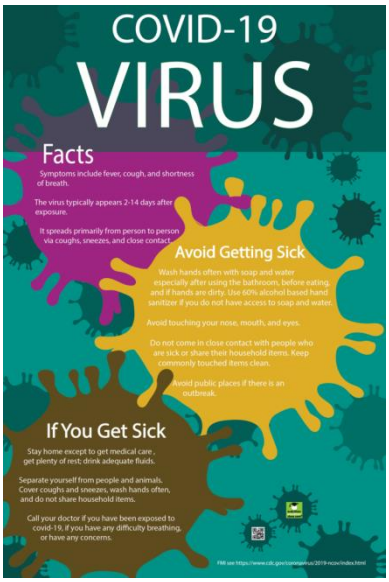
VI. Brochures Establish Your Business's Authority
VII. Brochures Provide You an Identity

LIMITATIONS

I. Printing Expense
II. Limited Space
III. Environmental Concerns

9.2.3 POSTERS

A poster is a temporary promotion of an idea, product, or event put up in a public space for mass consumption. Typically, posters include both textual and graphic elements, although a poster may be either wholly graphical or wholly text. Posters are designed to be both eye-catching and informative. The main function of a poster is to capture a moving audience with a message.



Poster

ELEMENTS OF A POSTER

I. **Title:** It should be:
   a. Differentiate each item by making some items bold or italic.
   b. The title should be catching and something a general audience will understand.
   c. Make the title as big as possible and not too long. The title should be readable from a distance of 5-7 meters. Use smaller fonts for the rest.

II. **Introduction:**It should be:
   a. State what is known, what is not known, the question you are asking, and why it is relevant.
   b. Use point form. Not more than 4 or 5 points. This is not an easy task.

III. **Methods:**It should be:

a. Outline the bare minimum that the audience needs to know to understand what you did.
b. Use a figure to illustrate the most important/unique/difficult aspect of your technique.

IV. **Conclusion:** It should be:

a. Use three or four short key word phrases to summarize your conclusions and their implications.
b. A summary figure is often very useful.

TYPES OF POSTERS

- Advertising Posters
- Political Posters
- Movie Posters
- Affirmation & Motivational Posters
- Event Posters
- Travel Posters
- Educational Posters
- Backlight Posters

DESIGNING A POSTER

The following steps should be followed:

i. Build your foundation
ii. Draft an outline
iii. Choose your color scheme
iv. Add your images
v. Add your copy and graphics
vi. Make sure your Call To Action stands out

ADVANTAGES

- A poster speaks for itself; the presence of its author is not necessary. It is therefore possible to reach a broader audience when compared to a presentation limited in time.
- It is also possible to present several posters in the same room and at the same time; visitors can have a look at those posters they are interested in.
- Sometimes as the author you have the possibility to present a poster while giving a short introduction. An interactive situation evolves while having a close contact to the audience, closer than when delivering a speech.

- Posters can be used several times and presented at different events.
- A poster is suited for people suffering from stage fright at least, for those who have difficulties when speaking in front of large groups. Standing next to their poster for some time in order to answer just a few questions is less stressful than talking on a lectern.

DISADVANTAGES

- Once a poster is printed it will be difficult to make corrections or adoptions; it is therefore less flexible when compared to a presentation that can be modified any time.
- A poster must attract attention. Especially when being presented at a poster fair, it has to compete with many others posters.
- Preparing a poster can take just as much time as when writing a speech. However, practice makes perfect.
- Posters generally require reduced content as well as getting to the point. Selecting what has to be included or omitted is not always easy.

22.4CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

CHOOSE THE RIGHT OPTION.

22.4.1 A printed sheet of paper (small sheet, flat or folded,) containing information or advertising and usually distributed free.

22.4.1.1 Leaflets

22.4.1.2 Posters

22.4.1.3 Package

22.4.1.4 Booklet

22.4.2 CTA stands for:

22.4.2.1 Call to avoid

22.4.2.2 Cash the all

22.4.2.3 Catching the all audience

22.4.2.4 Call-to-Action

22.4.3 Which of the following is a type of leaflet?

22.4.3.1 Concertina fold

22.4.3.2 Open gate fold

22.4.3.3 Roll fold

22.4.3.4 All the above

22.4.4 Which is a small book-with fewer pages and smaller dimensions than a "real" book, and usually a paper cover?

22.4.4.1 Leaflets

22.4.4.2 Posters

22.4.4.3 Package

22.4.4.4 Booklet

22.4.5 Which of the following is not a type of Booklet?

22.4.5.1 Newsletter

22.4.5.2 Single fold

22.4.5.3 Portfolios

22.4.5.4 Saddle Stitched

22.4.6 Which of the followings is/are not parts of Brochure?

22.4.6.1 Name and Logo

22.4.6.2 Slogan

22.4.6.3 Recipe booklets

22.4.6.4 All the above

22.4.7 Which of the followings is/are types of Brochure?

22.4.7.1 Gate Fold Brochures

22.4.7.2 Bi-Fold Brochures

22.4.7.3 Tri-Fold Brochures

22.4.7.4 All the above

22.4.8 Which is a temporary promotion of an idea, product, or event put up in a public space for mass consumption?

22.4.8.1 Pamphlet

22.4.8.2 Booklet

22.4.8.3 Poster

22.4.8.4 Flyer

22.4.9 Which of the followings is/are types of Poster?

22.4.9.1 Backlight Posters

22.4.9.2 Color scheme

22.4.9.3 Summary poster

22.4.9.4 All the above

22.4.10 Which of the following is/are elements of poster?

22.4.10.1 Title

22.4.10.2 Introduction

22.4.10.3 Methods

22.4.10.4 All the above

22.5SUMMARY

- Various print publications includes Leaflets, Booklets, Broachers, Newspaper, Posters, Books, Folders, and Packagers so on.
- A printed sheet of paper (small sheet, flat or folded,) containing information or advertising and usually distributed free. Sometimes it may be called as Flyer though leaflets are the superior in quality when compared to flyers.
- Booklet is a small book-with fewer pages and smaller dimensions than a "real" book, and usually a paper cover. Booklets are supremely multi-functional and perfect for story books, instruction guides, reports, product promotions, school projects, event programs, marketing collateral and recipe collections.
- Brochures have no set size for a brochure, though they are typically larger than flyers. Brochures can be 8.5 inches x 11 inches although 8.5 x 14 is also popular. A brochure's structure makes it stand out as people can fold it into sections.
- It is a temporary promotion of an idea, product, or event put up in a public space for mass consumption. Typically, posters include both textual and graphic elements, although a poster may be either wholly graphical or wholly text.

22.6 KEYWORDS

Leaflet: A printed sheet of paper (small sheet, flat or folded,) containing information or advertising and usually distributed free. Sometimes it may be called as Flyer though leaflets are the superior in quality when compared to flyers.

Single sheetLeaflet: The simplest form of leaflet marketing, one single sheet of A5 is also the most common. Designed to get your information to people in the minimum time possible to keep their attention, you can print on one or both sides of the paper.

Booklet: It is a small book-with fewer pages and smaller dimensions than a "real" book, and usually a paper cover. Booklets are supremely multi-functional and perfect for story books, instruction guides, reports, product promotions, school projects, event programs, marketing collateral and recipe collections.

Newsletter: Companies have started using a booklet as a newsletter where the customers get to know about the company, what is happening in it and any new amendments or policies. It is a great way to instil trust in the customers and form a stronger bond.

Recipe booklets: Such booklets contain recipes in short yet descriptive version. These are usually designed by chefs, companies selling cookery items or ingredients.

Instruction Manual: It also known as owner's manual. It contains important information about a product like how to assemble it, dismantle it, installation process, safety instructions, warranties and guaranties.

Portfolios: Companies that are into creative work such as photography, interior designing or those who make tailored products need a portfolio booklet to showcase their art and proficiency to probable clients. The clients get a fair idea about the kind and style of work the company is into.

Reference Guide: It is just like an instruction manual but a shorter form of that and contains the most essential information like key features, dos and don'ts etc.

Brochure booklet: A brochure booklet contains description, information and pictures about a product.In the times of fierce competition, even the booklets need to be good in design as well as content. In fact, they need to be bound properly so that they are user friendly and durable.

Saddle Stitched: It is the most commonly used binding. It involves folding sheets that are assembled together one inside the other and then stapling through the fold line. It is a center binding and lets the booklet to open flat at the center.

Coil/Spiral Binding: It is similar to saddle stitching but it requires making holes along the left corner of its pages and putting a metal or plastic wire through the holes.

Perfect Binding: Instead of stapling or coiling, in this method the pages are pasted at the spine and the other three sides of the booklet are cropped to create a perfect look.

Brochures: Brochures have no set size for a brochure, though they are typically larger than flyers. Brochures can be 8.5 inches x 11 inches although 8.5 x 14 is also popular. A brochure's structure makes it stand out as people can fold it into sections.

Poster: It is a temporary promotion of an idea, product, or event put up in a public space for mass consumption. Typically, posters include both textual and graphic elements, although a poster may be either wholly graphical or wholly text.

22.7SELF-ASSESSMENT TEST

79. Define printing, publishing and print-publishing.
80. Explain print publications pros and cons in detail.
81. Define leaflets and its functions.
82. Explain various parts of leaflets.
83. What are different types of leaflets?
84. What do you mean by booklets?
85. Explain different parts of a booklet.

86. How classification of different types of booklet is made?
87. Justify the purpose of booklets with their advantages and disadvantages.
88. Define brochures.
89. Explain various parts of a brochure.
90. Explain different types of brochures.
91. Define posters and elements of a poster
92. Explain different types of posters.
93. How to design a poster?

22.8ANSWERS TO CHECK YOUR PROGRESS

22.8.1 a) Leaflets
22.8.2 d) Call-to-Action
22.8.3 d) All the above
22.8.4 d) Booklet
22.8.5 b) Single fold
22.8.6 c) Recipe booklets
22.8.7 d) All the above
22.8.8 c) Poster
22.8.9 a) Backlight Posters
22.8.10 d) All the above

22.9 REFERENCES/SUGGESTED READINGS

22.9.1 https://getrevising.co.uk/grids/pros-and-cons-of-packaging
22.9.2 https://en.wikipedia.org/wiki/Publishing
22.9.3 https://www.directletterboxmarketing.co.uk/the-dos-donts-of-leaflet-design/
22.9.4 https://www.leafletfrog.co.uk/pages/what-are-leaflets
22.9.5 https://www.slideshare.net/soodpreeti/leaflet-pamphlet-and-booklet
22.9.6 https://www.lucidpress.com/pages/learn/how-to-design-booklets#:~:text=A%20booklet%20is%20a%20small,and%20usually%20a%20paper%20cover.
22.9.7 https://www.ibm.com/support/knowledgecenter/SSCJDQ/com.ibm.swg.im.dashdb.apdv.plsql.doc/doc/c0053912.htmlhttp://www.internationalpaper.com

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: MR. ABHISHEK SAINI
LESSON NO.: 10	VETTER: MR. AROHIT GOYAT
PRINT PUBLICATIONS-II	

STRUCTURE

30.1 LEARNING OBJECTIVES

After going through this lesson, you will be able to:

30.1.1 Define Print publications.

30.1.2 Identify different Print Publication like Newspaper, Books, Folders and Packages.

30.2 INTRODUCTION

As already discussed in previous chapter print is usually applied to text, images, or other visual content on any traditional medium, including paper (Leaflets, Booklets, Broachers, newspapers, Posters, Books, Folders, packagers, etc.)to convey a message. The word publication means the act of publishing, and also refers to any printed copies. Print media includes those media of communication which are controlled by space rather than time. It can be read at any

available time and can be kept record.

30.3 PRINT PUBLICATION

Various print publications includes Leaflets, Booklets, Broachers, Newspaper, Posters, Books, Folders, and Packagers so on. These offers numerous advantages (Pros) and disadvantages (Cons) which are enlisted as below:

ADVANTAGES

- The technology for print publications does not change at such a fast pace as online resources.
- Print publications can reach target audiences who have limited or no internet access.
- It gives a high intense reach to the public.

DISADVANTAGES

- More time is associated with printing and production of printed publications so it is not suitable for high risk, urgent public health announcements.
- Magazines aim for one particular target, while online is able to reach all.
- Online publications can have millions of visitors because they are usually free and may potentially reach everyone with internet access. Print depends on payments and subscriptions, therefore reaching far less customers.

15.2.1 NEWSPAPER

A newspaper is a publication containing news, information, and advertising, usually printed on low-cost paper called newsprint. The content may be general or special interest, and is most often published daily, weekly or monthly.

Newspaper

CONTENTS OF NEWSPAPER

i. **General News –** This is usually the most important news in both local and abroad. These are usually found on the front page of the paper. The title of the news is printed in big, bold letters called "banner headline"

ii. **Local and Foreign News Section –** Contains news from towns and cities of the nation and abroad.

iii. **Editorial Page –** This section contains articles called editorials. Editorials give views or opinions of the editor or publisher on certain issues or events.

iv. **Sports Page –** This section contains news on events containing sports from in and out of the country. This section also contains well-known people in the sports world.

v. **Classified Ads Section –** Contains advertisements that fall under the categories like "Help", "Wanted", "For Lease / For Sale", and "Wanted To Buy".

vi. **Business and Finance Section –** Contains businessmen and people interested in business with information on banking. Foreign exchange rates, imports and exports, and prices of prime commodities.

vii. **Entertainment Section –** Contains info about movies, radio, television and other activities for entertainment.

viii. **Home and Culture Section –** Provides info about budgeting, food preparation, house improvement, etc.

ix. **Society Page –** Contains news about important people who are celebrating special events in a particular place

x. **Travel and Tourism Section –** Contains a guide to travel and directs tourists to a scenic vacation spots and gives information on the activities in these places.

xi. **Announcements and Obituary Page –** Provides info on the activities of different religious sections and also lists people who recently died and the time and place of their burials.

TYPES OF NEWSPAPERS

Many ways to classify newspapers exist, including frequency of publication, language, region served, and topics covered.A "**daily newspaper**" is issued every day, often with the exception of Sundays and some national holidays. Saturday and where they exist Sunday, editions of daily newspapers tend to be larger, include more specialized sections

and advertising inserts, and cost more. Typically, the vast majority of these newspapersreporters' work Monday to Friday, so the Sunday and Monday editions largely depend on content done in advance or content that is syndicated. "**Weekly newspapers**" are also common and tend to be smaller and less prestigious than daily papers. However, those "**Sunday newspapers**" that do not have weekday editions are not considered to be weekly newspapers, and are generally equivalent in size and prestige to daily newspapers.Most nations have at least one newspaper that circulates throughout the whole country: a "**national newspaper**," as contrasted with a "**local newspaper**" serving a city or region.

Newspapers often refine distribution of advertisements and news through zoning and editioning. Zoning occurs when advertising and editorial content change to reflect the location to which the product is delivered. The editorial content often may change merely to reflect changes in advertising—the quantity and layout of which affects the space available for editorial—or may contain region-specific news. In rare instances, the advertising may not change from one zone to another, but there will be different region-specific editorial content.

NEWSPAPER PRODUCTION PROCESS

Newspaper production is an act that starts from the gathering of news stories, articles, opinions, advertorials and advertisements to printing and folding of the hard copy. Usually the news items are printed onto newsprint. The whole production process can be divided into four parts: Content gathering, Pre-press, Press and Post -press.

i. **Content Gathering:** Typical newspaper content can be dived in two parts: News/Information and Advertisement. News production starts with the reporters going out to their respective beat to gather stories and cover events and also the marketing department getting advertisement into the newspaper on daily basis. It starts with reporters getting their stories ready daily and sending their stories in electronically through their mails to the editor. Each reporter works with a particular desk in the newsroom, some of these desks are: Metro desk, Sport desk, Business desk, Political desk, Education desk and others. News gathering and dissemination is paramount to every newspaper as this is the responsibility of the newspaper house to the people and this can determine their level of advertiser's patronage. After stories are gathered, the Sub Editors are saddled with the responsibility of editing copies submitted by the reporter using a red pen or red font color, the Chief Sub Editor uses

blue while the Editor uses green. This tells that each of the editing done on a particular story is still subjected to the final editing done by either the Chief Sub Editor or the Editor in chief.

ii. **Prepress:** Pre-press is where photos are edited, advertisements are created and composed and the whole pages of the newspapers are laid-out and designed. After stories have been edited, the editor and other sub editors will sit in an editorial conference to determine what goes inside the paper for the day. Then, each sub editor is expected to plan their pages if possible. The marketing department also will forward the advertisements that have been paid for with specification of the pages allotted to the advert, all these will be forwarded to editorial department so as to add these pages in their planning process. The newspaper planning is done on a dummy sheet to give a prototype of the final outlook of each pages, this is called page planning. After the planning, the editorial department forwards the already planned pages to the graphic section where the dummy sheets are transformed a meaningful digital form.

At the pre-press, text, pictures, cutline, graphics, and graphical illustrations as well as color are put together to form the newspaper pages. Smaller newspapers sometimes still use desktop publishing programs (DTP) such as Corel Draw, Adobe PageMaker, Adobe InDesign, Quark Xpress and other graphic design software. This software enables the graphic designer to easily compose pages and output them on a hardcopy proof-printer for proofreading and sending the corrected and finished pages to a RIP (Raster Image Processor). The RIP transforms PostScript (PS/EPS) or PDF pages into rasterized TIFF G4 data. The TIFF data is usually imaged in a CTP-device using a Laser directly onto the offset printing plates. Earlier – and even sometimes nowadays – data imaging was done using a film-workflow. So the data was imaged at first onto a film and then the film was copied with UV-light onto UV-sensitive offset printing plates. The final stage in the newspaper pre-press phase is preparing the imaged offset printing plates for mounting onto the plate cylinder inside of the offset press. The plates have to be bent and often also punched so that they can be mounted easily and proper on the plate cylinder.

iii. **Press:** The printing process is the main process step during newspaper production. Quickness and reliability with at the same time reasonable producing are the cornerstones in the production and processing of print products.[2] Newspaper presses produce not just goods in process (sheets, signatures or reels of printout) as it is the case with typical printing presses. Instead newspaper rotary presses can produce copies which are finished goods. The typical newspaper press is divided into two parts:

a) **Printing:** The first functions of a newspaper press are loading and unwinding of newsprint reels. These functions are provided by the paster. Pasters unwind paper reels and automatically change paper reels at full production speed (e.g. 100.000 copies per hour). Often pasters are placed below the printing towers. The towers often consist of four printing units to print Cyan, Magenta, Yellow and Black ink onto the newsprint. The newsprint web travels upwards in the printing tower during the color is applied to it on both sides of the reel. Usually for every page there is one individual printing plate per color. This printing plate is mounted onto the plate cylinder within the printing unit which again is part of the printing tower. Modern presses can print full color on every page. Four color printing units are used for printing on one side of the paper web and another four printing units apply the backside print onto the paper web. Printing front and backside can happen simultaneously (blanket-to-blanket-configuration) or after another (satellite configuration) The printing units cannot just print one page like in digital printing, instead printing towers in newspaper presses can print up to 24 broadsheet pages in full color. If the press consists of several towers many more pages can be printed at once.

b) **Folding:** The folder starts were the printed webs come together. The folder can produce ribbons and combine these ribbons in such a way that the pages are sorted on top of each other. The folding process starts in the so called super structure and ends in the main folding units at the end of the press process. The ribbons are cut in such a way that the pages of the newspaper are separated from each other and the folder lays down the newspaper copies onto the delivery belt.

iv. **Post-press:** The copies are collected on the delivery belt and usually transported to the mailroom using a gripper conveyor system. The post press area is also often

called mailroom because here the copies are prepared for mailing to the customers. Newspaper copies can be bundled directly so that they are ready to be put into a truck for transportation. Alternatively extra preprints from the newspaper press or flyers/brochures from external sources can inserted into the newspaper copies before creating bundles. Those who subscribed get them delivered on their doorstep.

Purpose of Newspaper: In general, the purpose of a newspaper is to convey, as efficiently as possible, current information, or "news", to a particular audience. What constitutes "news" depends in part on the intended audience. Newspapers aimed at a general audience will carry news about politics, crime, wars and economics--just about anything that could interest a general reader. A farm newspaper, on the other hand, might carry news about developments in farming techniques, information about the progress of farm-related legislation through Congress, crop prices, information about county and state fairs, and so forth.

PROS AND CONS OF NEWSPAPER

Pros:

i. **Newspapers carry the news of the world**: Newspapers are the source of news for almost all countries in the world. They carry information regarding all the happenings around the world to all corners of the world.

ii. **Newspapers provide information and general knowledge**: Newspapers contain valuable information and news that is expected to not only inform but also to build and develop knowledge database.

iii. **Newspapers provide news about a country's** economic situation, sports, games, entertainment, trade and commerce. Through newspapers, we are able to tell what is happening in various industries around the world.

iv. **Good habit**: Reading newspaper makes a good habit and it is already part of the modern life. This habit will widen your outlook and will enrich your knowledge.

v. **Reading newspaper makes you well informed**: It enables you to take part in every discussion pertaining to the world's current events. By reading newspapers, you will not only improve your knowledge but you will also share your knowledge with others.

vi. **Boosts your self-esteem:** Reading newspapers will improve your knowledge in general and it will be easy for you to relate to other people who often talks about current events and politics. You will gather the courage to share your opinion about national and international issues.

vii. **Wide perspective**: Through newspapers, you will have a clear idea and understanding of what is happening in your country and the whole world.

viii. **Newspapers create employment:** Newspaper industry has created valuable employment to more people than most industries across the globe.

ix. **Newspapers are light in weight**: Newspapers are light in weight which makes them portable and easy to move around with.

x. **Newspapers improve language and vocabulary**: You will be able to build and improve on your language and vocabulary if you invest in reading newspapers.

Cons:

i. **Expensive**: In some or most of the newspapers the advertisement space may be expensive which prohibits people from advertising through the newspaper.

ii. **It is analogue**: As the Internet, Television or Radio are used widely by many people, so advertisers prefer newspaper less for advertisement compared to Internet and other medias.

iii. **It can easily be discarded**: Newspaper can be easily discarded once read, so less chances for advertiser to convert the advertisement into leads or sale.

iv. **Exposes your strengths**: Newspapers are available to all and sundry. This means that competitors can easily see the price of your product and hence they quickly react to your price which gives them a competitive advantage over your products.

v. **Fake news:** In some cases, the news published in the newspapers especially on the front page could be wrong. The news are even twisted and distorted to create a bad impression of an individual or company.

vi. **Poor quality**: Newspapers sometimes come published with poorly printed text and images that can hardly be read or seen by readers. This makes it difficult to get the intended information because the news has already been published and cannot be recalled.

vii. **Newspapers are cumbersome to carry around**: Newspapers are cumbersome to move and carry around because of their shape and lose pages. This makes it difficult to conveniently carry them from one place to another.

viii. **Newspapers cannot be updated**: Once they have been published, they cannot be changed or updated because of their nature. This makes them rigid in terms of news and information sources.

ix. **Newspapers may misrepresent information:** Sometimes newspapers are prone to information misrepresentation which may work against them especially in the court of public opinion.

x. **Newspapers are expensive cumulatively**: It is quite expensive to produce and publish newspapers especially because they have to be distributed across the country.

15.2.2 BOOKS

A **book** is a medium for recording information in the form of writing or images, typically composed of many pages (made of papyrus, parchment, vellum, or paper) bound together and protected by a cover.

PARTS OF A BOOK

Books are made up of three main sections. Each of these sections is made up of smaller sub-sections. These are:-

i. **Front matter:**The front matter of a book includes information before the actual text of the book or story, and it often has page numbers written in Roman numerals. In general, the front matter is made up of nine different parts. It's important to know that not all books will have all nine parts.

   a. **Half Title, Frontispiece, and Title Page:**The first three parts of the front matter include the half title, frontispiece, and title page. The half title is usually the first page when you open the cover of the book--it includes just the title of what you are about to read. The title is usually printed at the halfway point on the page (hence the name 'half title'). The frontispiece is printed on the left-side page following the half title and includes an image or a picture. Many fiction books include a frontispiece that depicts a scene from the story, but not all books will have a frontispiece. The title page is often printed on the right-hand page facing the frontispiece. Title pages include the title of the book as well as the author(s) and publisher (the company that printed the book).

   b. **Copyright Page:** One of the most important parts of a book's front matter is the copyright page. This page includes information about who has legal rights to the

information in the book, and it gives credit to the various people who helped publish, edit, or illustrate the book. You can also find the edition of the book on the copyright page. The edition lets you know how many times the book has been printed--if a book is 'first edition,' that means this is the first time the content has been published. The copyright page also includes the cataloguing information. For instance, if the book was published in the U.S., it would display the Library of Congress Catalogue Number.

c. **Dedication and Acknowledgments Pages:** After the copyright page is often a dedication page that tells the reader who the author wrote the book for. In many instances, books are dedicated to close friends, loved ones, or colleagues. Some books also have an acknowledgments page, which is located in the right-hand side facing the dedication and mentions the people who helped the author write the book.

d. **Table of Contents:** Have you ever opened up a book and were unsure of how to find what you were looking for? A good place to help you find what you're looking for is the table of contents. This includes information like chapter titles and what pages you can find specific chapters or sections. Table of contents are very common in reference books, but you'll also find them in other nonfiction and fiction books as well.

ii. **The body:** The body of a book is pretty self-explanatory: the main text that goes between the front matter and back matter. For readers and writers alike, this is where the magic happens - but it's not just the content that's crucial, but also how to arrange it. The body includes the following:

a. **Prologue (for fiction):** a section just before the main story begins that sets the stage and engages the reader. Indeed, many prologues contain intriguing events that only become contextualized later in the story.

b. **Introduction** (for nonfiction): a few pages that usher the reader into the subject matter. The intro goes over early events or information related to the main narrative, so the reader has a solid footing before they begin.

c. **Chapters**: every single book has chapters, or at least sections, into which the narrative is divided. These chapters may not be designated by a chapter heading, some authors start new chapters just by using page breaks. But if you don't use *anything* to break up your content, your readers will not be happy.

d. **Conclusion (for nonfiction):** Asection that sums up the core ideas and concepts of the text. Separately labelled conclusions are becoming less common in nonfiction books, as most contain conclusions in the final chapter, but academic theses may still be formatted this way.

iii. **End Matter: It includes:**

a. **Glossary:**Define at least three important (or unfamiliar) terms used in the film. For example, for Harry Potter, you can define terms such as "muggles" or "quidditch."

b. **Index:** Describe at least five characters and at what point in the movie they first show up. For example, you might use "Voldemort" and list the first time he appears in the story.

c. **Bibliography:**In MLA format, cite the film along with any websites or articles you used to find the information to create this book.

TYPES OF BOOKS

All the books can be broadly classified under two main categories:

i. **Fiction:** Fiction books contain a made-up story – a story that did not actually happen in real life. These stories are derived from the imagination and creativity of the authors and are not based on facts. The Alchemist by Paulo Coelho, 1984 by GeorgeOrwell, Harry Potter Series by J. K. Rowling are some of the examples of fiction books.

ii. **Nonfiction:** Non-fiction or nonfiction books are factual books. Unlike fiction books, they are based on facts and information that can be verified to be true. Some examples of non-fiction books are The Autobiography of Benjamin Franklin by Benjamin Franklin, How to Win Friends and Influence People by Dale Carnegie, an encyclopaedia, etc.

Sometimes you may come across another category named semi-fiction. Do not be confused. Even semi-fiction books are taken to be work of fiction. Apart from the made-up story, these books also include some factual information. For example, the famous book The Kite Runner by Khaled Hosseini is based on real historical events of Afghanistan, but the story told in this book is actually a made up one.

Classification of Books

15.2.3 FOLDERS

Folder is a kind of folder that holds papers and money together for organization and protection. File folders usually consist of a sheet of heavy paper stock or other thin, but stiff, material which is folded in half, and are used to keep paper documents.

Folders

PARTS OF FILE FOLDERS

File folders usually consist of a sheet of heavy paper stock or other thin, but stiff, material which is folded in half, and are used to keep paper documents.

TYPES OF FOLDERS

Basic folders are the typical choice. They fit just about any filing system at a standard 9.5 inches. Hanging file folders are your smaller option, but this is because they sacrifice space to come equipped with hooks to hang inside your drawers

- Basic File Folders
- Hanging File Folders
- Straight Tab Folders
- Right-Cut Tabs
- Repositionable Tabs
- Colored File Folders
- Manila File Folders
- Kraft File Folders

- Plastic File Folders
- Pressboard File Folders

FOLDER PREPARATION

File folders can be made from plastic or paper. When paper is used, it is preferable that it is made from paper pulp with long cellulose fibre, such as kraft paper or manila paper.

- **Tabbed File Folders:** File folders can have tabs in them. Tabs are often helpful when many files are being stored together and there needs to be an easy way to differentiate them. The tabs can be on the top of the folders (common in business offices) or on the end/side (common in medical offices). Tab sizes vary and are designated based on the size of each tab in proportion to the total length of the folder. They can be:
  - **i.** Straight cut. There is one long tab.
  - **ii.** 1/3 cut. There are three tab positions, each is approximately 1/3 of the total length of the folder. Essentially, tabs are cut to be in the left, center, or right positions.
  - **iii.** 1/5 cut. Similar to the 1/3 cut, except there are five tab positions, each being 1/5 of the total length of the folder.
  - **iv.** 2/5 cut. There are only two tab positions, the right and the right of center (ROC) positions. ROC is somewhat like a left position, but doesn't extend to the end of the folder because the tabs are only 2/5 of the total length.
  - **v.** 1/2 cut. There are two tab positions, left and right.

ADVANTAGES OF FOLDER

- Easy to Access and handle
- Easy to Understand and carry

15.2.4 PACKAGES

A package is a small container in which a quantity of something is sold. Packages are either small boxes made of thin cardboard, or bags or envelopes made of paper or plastic.

COMPONENTS OF A PACKAGE

- The package specification is the public interface, comprising the elements that can be referenced outside of the package. A package specification is created by executing the ‘create package’ statement.

- The package body contains the actual implementation of all of the procedures and functions that are declared within the package specification, as well as any declaration of private types, variables, and cursors. A package body is created by executing the 'create package body' statement.

Packages

TYPES OF PACKAGES

Various types of packages are enlisted as below:

i. **Paperboard Boxes:** Paperboard is a paper-based material that is lightweight, yet strong. It can be easily cut and manipulated to create custom shapes and structures. These characteristics make it ideal to be used in personalized packaging. It is made by turning fibrous materials that come from wood or from recycled waste paper into pulp, and then bleaching it. Paperboard packaging comes in various grades, each suitable for different packaging requirements.

ii. **Corrugated boxes:** Corrugated boxes simply refer to what is commonly known as: Cardboard. Corrugated boxes are the ones many probably consider as 'cardboard' as it produces the large shipping, shoe & storage boxes. What a lot of people do not realize is that corrugated boxes also come in different types depending on the durability and strength of the box. Identifying a certain corrugated material, however, is easy. The material is determined through its corrugated medium (also known as fluting). Identifying a corrugated material is easy. It consists of 3 layers of paper, an outside

liner, an inside liner and a corrugated medium (also known as fluting). The corrugated medium that gives it strength and rigidity.

iii. **Plastic Boxes:** Plastic is used in a wide range of products, from spaceships to paper clips. A number of traditional materials, such as wood, leather, glass, ceramic, and so on, have already been replaced by plastic.

iv. **Rigid Boxes:**It's a type of cardboard which is durablewith premium appearance. This type of cardboard material is called a rigid box.

v. **Chipboard Packaging:**Chipboard packaging is used in industries such as electronic, medical, food, cosmetic, and beverage. A chipboard basically is a type of paperboard that is made out of reclaimed paper stock. It can be easily cut, folded, and formed. It is a cost-effective packing option for your products.

vi. **Poly Bags:**A poly bag, also known as a pouch or a plastic bag, is manufactured out of flexible, thin, plastic film fabric. It is one of the common types of packaging and can carry a wide range of products including food items, flowers, waste, chemicals, magazines, and so on.

vii. **Foil sealed bags:**Foil sealed bags can be seen typically in most coffee and tea packaging. Because it keeps the products dense to maintain the flavor, protects it from bacteria coming in and helps increase shelf life. Apart from food, foil sealed bags are also used to package bedding and clothing products. The process involves removing the oxygen from the bag to keep the fabric tight and secure in order to prevent the growth of fungi and other bacteria. Nuts, cereals, smoked fish, cheese and cured meats are also packaged with foil sealed bags to prevent from spoilage.

Steps To Be Followed For A Good Package

No matter what product need to ship, one should be able to expect that product will get to its destination just as it was shipped. To ensure product safety, there are several important steps any company should take when packaging. Following these 6 steps ensure product is packaged perfectly, every time. These are:

i. **Organize:** It may seem obvious, but organizing a distribution center's packaging space can make a big difference. A workspace should be large enough to have room to move the package around, with all necessary packaging materials in reach. Ideally, the area

should have storage space or pegboards to keep a large variety of materials in the workspace, as different types and sizes of products will require different materials.

ii. **Measure:** Before selecting the box you plan to ship your product in, it is a good idea to measure your product. Once your product is measured, add about 2 inches to each the width, the height, and the length to derive the ideal box size. This ensures that you will have room to wrap each product and fill your box with extra padding so your goods will be protected while in transit.

iii. **Select:** Now that you have measured your product or products, it is time to select the right box. Hughes offers a wide selection of corrugated packaging that is perfect for any product or industry. Designed to be strong and durable, they are one of the most common and safest packaging material. Visit our package size chart to make sure you are ordering the correct sized box for your needs.

iv. **Protect:** Now that you have selected your packaging, it's time to protect your product. There are numerous types of protective packaging, so make sure to choose the one that best suits your company's needs.

v. **Seal:** Now that your product is properly protected and fitted into the proper size box, it is time to seal the box. Do not use cellophane or duct tape, as neither are strong enough to properly seal your box. Instead, look for proper packaging tapes or adhesives. Make sure you have a full seal on your product before you send it off for shipping. Apply 2-3 strips of tape where packaging overlaps, so you do not have to worry about the packaging opening during shipment.

vi. **Label:** Though labeling is the last step, it is one of the most important steps. Double check the recipient's address and place the label on the top of the box.

Purpose of Package

Purpose of package is to ensure:-

i. **Safety:** Packaging is used to keep your product safe from external factors. It also prevents human tampering. If you want to sell fruit juice, you just can't hand it over to customers. It should be packaged in something, like a standup pouch.

ii. **Brand Visibility:** You provide the best product in your category and you want your customers to remember that.

iii. **Bundling it together:** If you want to sell an ounce of something, you need to create a packet so that the right amount is bundled together.

iv. **Theft prevention:** If you sell your product loose, there are chances that the retailer doesn't give the right amount to the customer and saves some part for himself. There are other cases too where theft can be done in the absence of packaging.

ADVANTAGES

- Serves as protection for the product
- Advertises the company with its design
- Can be designed to suit the theme
- Can be designed to appeal to target market
- Can be made to fit in the point of sale

DISADVANTAGES

- Cost money to make
- Takes a while to be made which might slow down the production of the product as a whole
- Time consuming to design
- Might accidently offend certain ethnic groups if used offensive symbols or designs

30.4 CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

CHOOSE THE RIGHT OPTION.

30.4.1 Which of the following is not an important function of books?

30.4.1.1 Transmission of culture.

30.4.1.2 Diffusion of ideas and knowledge.

30.4.1.3 Marketing.

30.4.1.4 Entertainment.

30.4.1.5 None of the above.

30.4.2 Newspapers primarily serve which functions?

30.4.2.1 Surveillance.

30.4.2.2 Correlation.

30.4.2.3 Entertainment.

30.4.2.4 All of the above.

30.4.3 With the rise of the internet and other new media, the publishing industry is no longer a major worldwide industry.

30.4.3.1 True

30.4.3.2 False

30.4.4 There are more daily newspapers today than there were sixty years ago.

30.4.4.1 True

30.4.4.2 False

30.4.5 Newspaper is a source of information provided to the

30.4.5.1 Companies

30.4.5.2 Societies

30.4.5.3 Leaders

30.4.5.4 Governments

30.4.6 Magazine performance has remained stable in recent years due to

30.4.6.1 The development of brand values

30.4.6.2 Multi-page combinations

30.4.6.3 Low cost

30.4.6.4 Their ability to address segmented audiences

30.4.7 In general, newspapers offer low selectivity and low impact as a media choice

30.4.7.1 True

30.4.7.2 False

30.5 SUMMARY

- A newspaper is a publication containing news, information, and advertising, usually printed on low-cost paper called newsprint. The content may be general or special interest, and is most often published daily or weekly.
- A "daily newspaper" is issued every day, often with the exception of Sundays and some national holidays.
- "Weekly newspapers" are also common and tend to be smaller and less prestigious than daily papers. However, those "Sunday newspapers" that do not have weekday editions are not considered to be weekly newspapers, and are generally equivalent in size and prestige to daily newspapers.
- A book is a medium for recording information in the form of writing or images, typically composed of many pages (made of papyrus, parchment, vellum, or paper) bound together and protected by a cover.
- Parts of a Book: Books are made up of three main sections. Each of these sections is made up of smaller sub-sections. These are front matter, the body and end matter.

- Folder usually consist of a sheet of heavy paper stock or other thin, but stiff, material which is folded in half, and are used to keep paper documents.
- Package is a small container in which a quantity of something is sold. Packages are either small boxes made of thin cardboard, or bags or envelopes made of paper or plastic.

30.6 KEY WORDS

Newspaper: A newspaper is a publication containing news, information, and advertising, usually printed on low-cost paper called newsprint. The content may be general or special interest, and is most often published daily or weekly.

Types of Newspapers: Many ways to classify newspapers exist, including frequency of publication, language, region served, and topics covered.

Daily Newspaper:A D**aily newspaper**is issued every day, often with the exception of Sundays and some national holidays.

Weekly Newspaper: Weekly newspapers are also common and tend to be smaller and less prestigious than daily papers. However, those Sunday newspapers that do not have weekday editions are not considered to be weekly newspapers, and are generally equivalent in size and prestige to daily newspapers.

Book:A book is a medium for recording information in the form of writing or images, typically composed of many pages (made of papyrus, parchment, vellum, or paper) bound together and protected by a cover.

Folder: Folders usually consist of a sheet of heavy paper stock or other thin, but stiff, material which is folded in half, and are used to keep paper documents.

Package: A package is a small container in which a quantity of something is sold. Packages are either small boxes made of thin cardboard, or bags or envelopes made of paper or plastic.

30.7 SELF-ASSESSMENTTEST

94. Define newspaper.
95. Explain various contents of newspaper.
96. Classify different types of newspapers.

97. Explain in detail about newspaper production process
98. Justify purpose of newspaper in your own words with its pros and cons.
99. Explain in detail about books.
100. Classify various parts of a book
101. Classify various types of books
102. Define folders and explain different parts of file folders
103. Classify types of folders
104. Explain in detail about folder preparation
105. Write down the advantages of folder.
106. What do you mean by packages?
107. Explain various components of a package
108. Classify various types of packages.
109. Enlist the steps to be followed for a good package.
110. Justify the purpose of package with advantages and disadvantages of package.

30.8 ANSWERS TO CHECK YOUR PROGRESS

30.8.1 e) None of the above

30.8.2 d) All of the above

30.8.3 a) True

30.8.4 a) True

30.8.5 b) Societies

30.8.6 d) Their ability to address segmented audiences

30.8.7 a) True

30.9 REFERENCES/SUGGESTED READINGS

30.9.1 https://getrevising.co.uk/grids/pros-and-cons-of-packaging

30.9.2 https://en.wikipedia.org/wiki/Publishing

30.9.3 https://www.directletterboxmarketing.co.uk/the-dos-donts-of-leaflet-design/

30.9.4 https://www.leafletfrog.co.uk/pages/what-are-leaflets

30.9.5 https://www.slideshare.net/soodpreeti/leaflet-pamphlet-and-booklet

30.9.6 https://www.lucidpress.com/pages/learn/how-to-design-booklets#:~:text=A%20booklet%20is%20a%20small,and%20usually%20a%20paper%20cover.

30.9.7 https://www.ibm.com/support/knowledgecenter/SSCJDQ/com.ibm.swg.im.das

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: DR.UMESH C. PATHAK
LESSON NO.: 11	VETTER:PROF. HARISH ARYA
STILL PHOTOGRAPHY	

STRUCTURE

11.0 LEARNING OBJECTIVES

After reading this lesson you will be able to-

- **Know the historical perspective of the Camera.**
- **Define the Camera and its Parts.**
- **Acquaint how the camera works, Shutter Speed & Aperture**
- **Identify different techniques of Photography**
- **Determine the various types of Photography.**

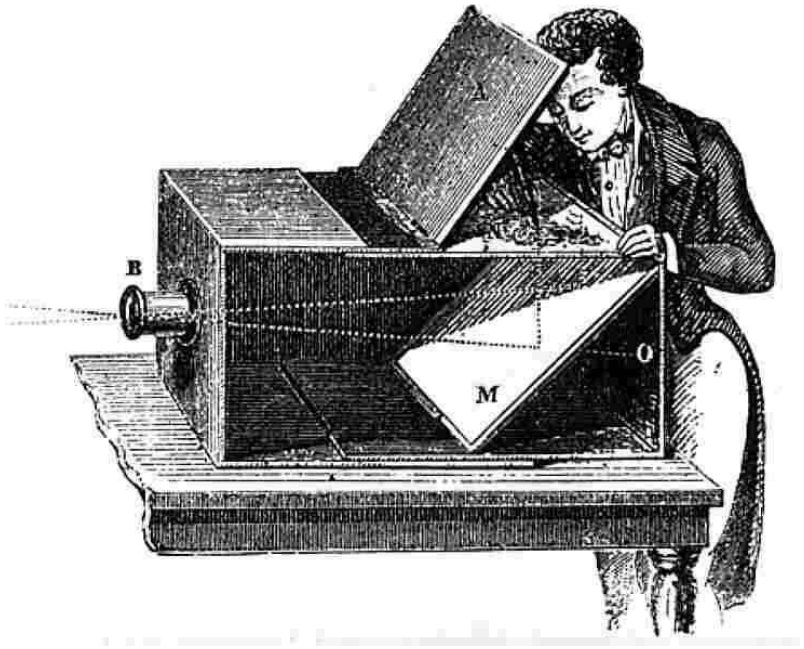
11.1 INTRODUCTION

Around since the 5th century B.C.E. the basic idea of photography has been around. It wasn't until an Iraqi scientist invented something called the **camera obscura** in the 11th century that the art came into being.

The camera hadn't actually captured images back then, it just projected them onto another

surface. Only upside down were the pictures, but they could be traced to make accurate sketches of real objects like houses.

The first obscura camera used a pinhole in a tent to project an image into the darkened area from outside of the tent. Only by the 17th century did the camera obscura become small enough to be portable. Also during this time, simple lenses were introduced for focusing the light.



Camera Obscura Box, 18th Century

The Premier Permanent Pictures

Photography, as we now learn, started in France in the late 1830's. Joseph NicéphoreNiépce used a handheld obscura camera to expose a bitumen-coated pewter plate to the light. This is the first image recorded that hasn't quickly faded.

The success of Niépce led to a number of other experiments, and very rapid progress was made in photography. In the mid- to late-1800s daguerreotypes, emulsion plates, and wet plates were developed almost simultaneously.

The photographers experimented with various chemicals and techniques for each type of emulsion. The three which have been instrumental in the development of modern photography are below.

World's first Photograph by Joseph NicéphoreNiépce

View from the Window at Le Gras, c. 1826

Source: **https://cool.culturalheritage.org/byorg/abbey/an/an26/an26-3/an26-307.html**

The experiment conducted by Niépce led to collaboration with Louis Daguerre. This resulted in the creation of the daguerreotype, a precursor of modern film.

- A copper plate was coated with silver before being exposed to light and exposed to iodine vapour.
- The early daguerreotypes had to be exposed to light for up to 15 minutes in order to render the image on the plate.
- The daguerreotype was highly popular until it was replaced by emulsion plates in the late 1850s.

Platelet Emulsion

Emulsion plates, or wet plates, were less expensive than daguerreotypes and required an exposure time of two or three seconds. This made them far better suited to portrait photographs, which at the time was the most common use of photography. Many Civil War photographs were produced on damp plates.

Such wet plates used an emulsion process called the Collodion process, instead of a clear picture plate coating. Bellows were added to cameras during this time , to help with focusing.

Ambrotype and tintype were two common types of emulsion plates. Ambrotypes used a glass plate in place of the daguerreotypes copper plate. Tintypes worked a tray of nickel. Although these plates were much more sensitive to light, they needed to be quickly produced.

Photographers wanted chemistry at hand and many were riding in wagons that served as a darkroom.

Dry Tiles

Photography made another major move forwards in the 1870s. Richard Maddox improved on a previous invention to produce dry gelatine plates in speed and quality which were nearly equal to wet plates.

These dry plates could be stored in place of being made as required. This allowed much more freedom for photographers to take photographs. The process also allowed for smaller, hand-held cameras. As exposure times diminished, the first camera was created with a mechanical shutter.

11.2.1CAMERA & ITS PARTS

A camera is an apparatus that takes photos (photographs). It uses film or electronics to image something. Photography is a tool. ... On one side of the camera there is a hole where the light can get in through the lens and this is called the aperture.

SLR CAMERA PARTS

BODY

The camera body is the most basic part of a camera. It is the box that holds the film and the camera controls. The lens is either built-into the body or attaches to the body. The body also houses a battery that powers the shutter, flash, light meter, and other controls. There are generally rings to connect a strap to the camera for easy carrying as well.

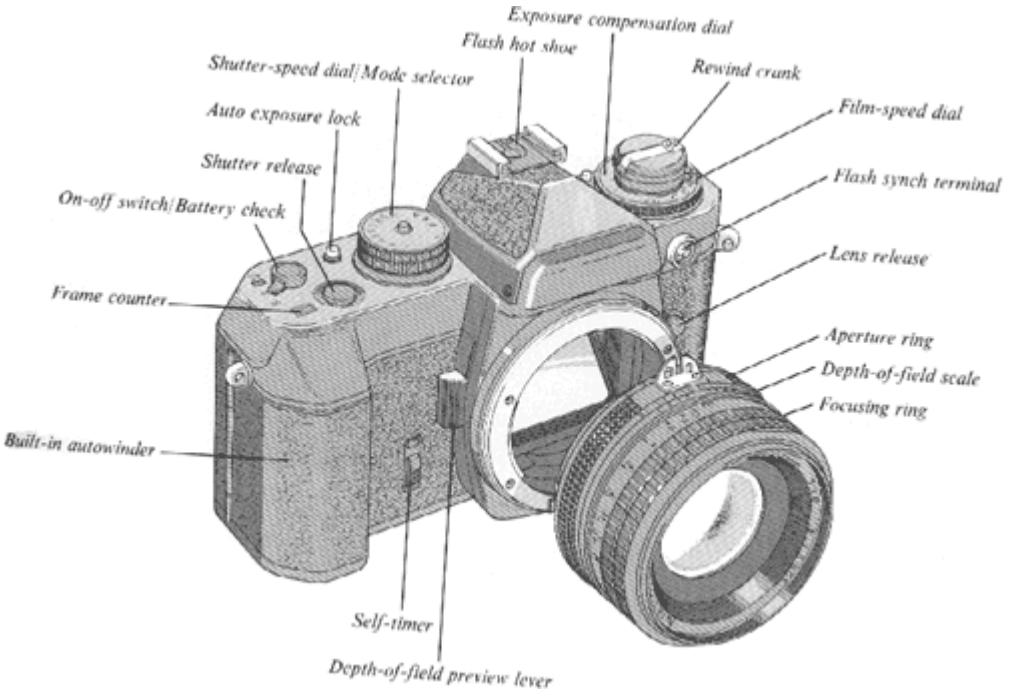
VIEWFINDER

The viewfinder is the hole in the back of the camera that a photographer looks through to aim the camera. Some viewfinders use a mirror inside the camera to look through the lens (TTL). Other viewfinders are simply holes through the body of the camera. Viewfinders that look through the lens (TTL) allow the photographer better accuracy when composing their images.

SHUTTER RELEASE

The shutter release is a button that raises a shutter inside the camera for a specified amount of time to allow light to expose the film. In a SLR camera, this button also raises a mirror that allows the photographer to use the viewfinder to look through the lens itself. Many SLR cameras also allow a remote release of the shutter via a cable or IR remote.

In automatic cameras, the shutter release also causes the film to advance to the next exposure. In manual cameras, there is a "film advance lever" that must be turned in order to advance the film and the exposure counter.



Parts of Camera

SHUTTER

An opaque piece of metal or plastic inside your camera that prevents light from reaching the film or digital sensor. The shutter is opened, or released, by the shutter release button. The amount of time the shutter stays open is controlled by the shutter speed setting.

SHUTTER SPEED CONTROL

The shutter speed control is the point on your camera where you set the amount of time the shutter will remain open. On automatic cameras, this is generally accessed through a menu and displayed on a screen on the back of the camera. In manual cameras, the shutter speed is generally controlled and displayed on a knob on the top of the camera. The shutter speed is measured in fractions of a second but is generally shown as the denominator only. For example, 1/60 of a second is shown as 60.

FILM SPEED CONTROL

The film speed control allows you to calibrate your camera's meter to your film speed so that you will get an accurate exposure reading. The film speed may be set electronically through a menu or via a knob/button on manual cameras. On manual cameras, the control is often integrated with a film speed indicator on the top of the camera. On automatic cameras, the control and film speed indicator are generally separate with the film speed being indicated on the electronic menu display on the back of the camera.

F-STOP CONTROL

On automatic cameras, the F-Stop control is on the camera. For older manual cameras, the F-Stop is controlled on the lens. The F-Stop controls allow you to set the size of the aperture within the lens.

FILM COMPARTMENT

In film cameras, there is a compartment in the back of the camera to hold the film. This compartment has a space for the film canister, sprockets to guide the film across the exposure area, a pressure plate to tighten the film, and a take up reel to wind the film. When the roll of film has been completely exposed, automatic cameras use a small motor to rewind the film. Manual cameras require the photographer to turn a small "rewind knob" to manually rewind the film into the canister. If the film is not rewound before the back compartment is opened, the film will be exposed to enough light to ruin the images.

FLASH

Most cameras now include a built-in flash. Some are simple light bulbs built into the front of the camera. On SLR cameras, most built-in flashes pop-up out of a protective storage area on the top of the camera. External flashes can often be attached via the "hot shoe mount" or, in the case of manual cameras, an small connector port on the front of the camera that accepts a cable attached to a distant flash.

HOT SHOE MOUNT

The hot shoe mount is a point on the top of most SLR cameras where an external flash can be connected. It is called a "hot shoe" because it has electrical contact points and guide rails that fit over the bottom of the flash like a shoe.

LENS RING MOUNT

On cameras that allow interchangeable lenses, there is a metal ring on the front of the camera where the lens will attach. This ring contains electrical contact points to connect the lens controls to the camera body. There is a small button or lever to the side of this mount called the "lens release button" that releases the lens from the body.

LENS

Rounded polished glass which used to click the picture in a camera is known as Lens. Lens is the part of the camera (or an attachment for the camera) that focuses light into the body and onto the film. The aperture is also contained within the lens.

OPTICAL LENS

On the front of a camera lens there is a glass lens that focuses light into the camera body and onto the film. Inside the lens body, there are several other optical lenses that further refine the image. These lenses are sometimes called "elements".

FILTER THREADS

In front of the first optical lens, there is a small ring with screw threads cut into it. These screw threads allow for filters and other accessories to be easily attached to the front of the lens. Each lens carries a second mm rating that tells the diameter of this front attachment point.

FOCUSING RING

Each lens has a focusing ring. This is a section of the lens that rotates to allow the photographer to focus the image. On automatic cameras, this ring is moved by a small motor within the lens whenever the photographer presses the shutter release buttonhalfway down. These rings are usually marked with guide numbers showing how far away a subject is when focused.

FOCAL LENGTH RING

Each lens that has zoom capability has a focal length ring. This ring allows the photographer to zoom in or zoom out on a subject. Lenses are often described by their focal length. For example, a lens may be called a 70-300mm lens. This indicates that the lens can zoom from 70mm to 300mm. Example of images taken with different focal lengths.

APERTURE RING

The aperture ring on a lens allows the photographer to control the aperture within the lens. These settings are marked on the lens using F-Stops. On automatic cameras the aperture can only be controlled through the camera body F-Stop settings.

APERTURE

The aperture is an adjustable opening in the lens used to allow light onto the film or digital surface. The size of the aperture is measured by the F-Stop setting. The larger opening of the aperture results in less light needed to expose the image and less depth of field (less in focus). A smaller opening of the aperture results in more light needed to expose the image and more depth of field (more in focus).

LENS MOUNT

The lens mount is a metal area that has been machined into a particular shape to fit a specific camera body type. Each camera manufacturer uses a different lens mount design. The lens is attached to the camera at the lens mount ring by lining up a small dot on both the camera body and the lens. The lens is then gently rotated into place. The lens mount also contains contacts that will match up with contacts on the lens ring mount to allow the camera to control the lens.

11.2.2 PRINCIPALS OF PHOTOGRAPHY

Photography is something more than an art. It's more of a talent. Professional photographers take time to research and practice their craft and know just what it takes to take an eye-catching photograph. There are seven photographic elements that break down each of the things that a true artist should focus on, and these are: line, shape, shape, texture, pattern, color and space.Each one brings a picture with its own unique quality.

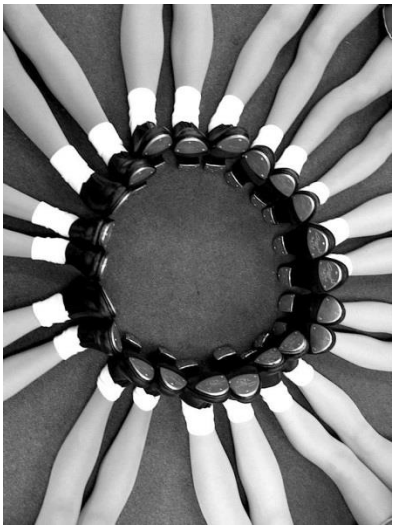
LINE

Line can be upright, horizontal, curved, or jagged. Examples: highways, sunsets and bridges.

Source: https://www.pexels.com/photo/bridge-path-straight-wooden-2257/

SHAPE

Lines that converge with each other can form shapes. It can be Geometric (square, triangle, circle etc) or Organic (leaves and humans). Shapes are two-dimensional and flat (circle).



Source: **https://in.pinterest.com/pin/861735709933664304/**

FORM

Three-dimensional representation of Geometric objects (sphere, cube or cone) or organic (all other forms such as people, animals and tables etc). It usually by the use of shadows and light.

Source:https://commons.wikimedia.org/wiki/File:Pyramid_of_Khafre_Giza_Egypt_in_2015_2.jpg

TEXTURE

The use of lighting to bring out object details, making it easy to see if a surface is smooth or soft.

Source: **https://pixabay.com/photos/leaf-texture-pattern-design-4380425/**

PATTERN

Making an interesting picture using repetition.

Source: http://www.easybasicphotography.com/basic-picture-composition.html

COLOR

To set a mood using warm or cool colors.

Source: https://in.pinterest.com/pin/790241065858920300/

SPACE

A statement can be made using either the negative or the positive space. Often seen when using third party rule.

Source: https://i.pinimg.com/originals/fd/83/e5/fd83e507abcf4b1a6888a256b3fcc9db.jpg

RULE OF THIRD

Putting a nine-square grid over a photo is the best way to illustrate one of the most popular composition techniques of photography, the rule of thirds. You 'd break an image into thirds, both horizontally and vertically, reaching a total of nine segments. If you place the most interesting element of your photos along one of those lines, your photo will of course be well-composed, based on the general rules of photography of the form.

Source: http://jeffbrew.com/wp-content/uploads/2012/02/beach-thirds.jpg

LIGHTING AND PHOTOGRAPHIC COMPOSITION

The seven basic photographic elements all come down to illumination and composition. New photographers concentrate most on these two products. In addition to the rule of thirds, there are many photographic composition techniques, including symmetry, which uses tricks such as reflections to make an otherwise ordinary photo more interesting, and depth, combining the foreground and background in interesting ways to bring an image to life. Another important element of photography is "shooting light." That means searching for and highlighting the way the light hits objects of your shot.

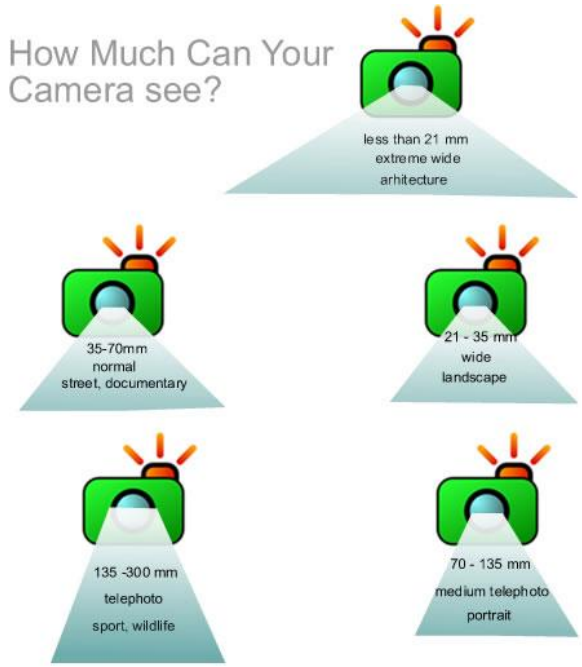
11.2.3SPECIAL PHOTOGRAPHIC TECHNIQUES

Some Photographic techniques are:

FOCAL LENGTH

A lens' focal length defines its viewing angle, and thus how much the subject will be magnified for a given photographic location.The perspective of an image also determines the focal length.Longer focal lengths require shorter periods of exposure to reduce burring caused by hand shake.

The Focal Length means how much can your camera see.



LENS AND THEIR UTILITY

Lens Focal Length (35mm equiv)	Lens Type	Use in Photography
Less than 21 mm	Extreme Wide Angle	Architecture
21-35 mm	Wide Angle	Landscape
35-70 mm	Normal	Street & Documentary
70-135 mm	Medium Telephoto	Portraiture
135-300 mm	Telephoto	Sports, Bird & Wildlife

HEAD ROOM

Headroom (framing by photograph) ... Headroom primarily refers to the distance between the top of the subject's head and the top of the picture, but the term is often used to include the sense of space on both sides of the image instead of lead room, nose room or 'looking room.'

USE A POLARIZING FILTER

If you can only buy one lens filter, make it a polarizer. The recommended polarizer type is circular, as these allow your camera to use TTL (through the lens) metering such as auto exposure.

This filter helps to minimize water as well as metal and glass reflections; it enhances sky and foliage colors and will help give your images the WOW factor. All of that will be done while protecting your lens. For all your photography there is no reason why you can't turn it on.

DEPTH OF FIELD

Depth of field is the area of appropriate sharpness before and behind the subject that focuses the lens on. Simply put, this refers to the way the area around your subject is blurry or sharp.

Depth of field refers to the distance range which appears to be acceptably sharp. This varies depending on camera position, aperture and focus distance, while print size and viewing distance can also influence our field depth perception.

A shallow depth of field refers to a tiny focus area. The subject is often in focus whilst the background is blurred. This is best for portraits, and with aperture is one way to adjust that.

There are several ways to adjust field depth including aperture, the distance between the camera and the subject, the lens focal length, and even the sensor size of the camera.

A deep depth of field captures a wider focus area, often keeping all straight and visible in the shot.

There are several ways to change field depth, including aperture, camera-subject distance, lens focal length, and even camera-sensor scale.

WHAT AFFECTS THE DEPTH OF FIELD?

- Aperture
- Camera-subject distance
- Focal length of lens
- Size of camera sensor

It's really that simple: aperture, focal length, and the subject distance. You can start capturing professional and dynamic looking images with even the most basic equipment

when you understand how the combination of these settings works in combination.

CREATE A SENSE OF DEPTH

It helps to create a sense of depth when photographing landscapes, in other words it makes the viewer feel like they are there.

To hold the foreground and background clear use a wide-angle lens for a panoramic view and a low f/16 or smaller aperture. Placing an object or person in the foreground helps to give a sense of scale and underlines the distance.

If possible using a tripod, since a small aperture typically allows a slower shutter speed.

USE SIMPLE BACKGROUND

In digital photography, the straightforward approach is typically the safest, and you have to determine what needs to be in the picture, while not having something that is distracting.

Pick a plain backdrop if possible-in other words, neutral colors and clear patterns. Instead of a patch of color or an odd building in the background, you want to draw the eye to the image focal point. This is particularly vital in a shot that places the model off centre.

CHOOSE THE RIGHT ISO

The ISO level defines how light-sensitive your sensor is, and also how fine your image grain is.The ISO we choose depends on the situation – when it's dark we need to push the ISO up to a higher number, say anything from 400 to 3200 as this will make the camera more light-sensitive and then we can avoid blurring.

We can choose ISO 100 or the Auto setting on sunny days, as we have more light to work with.

11.2.4SHUTTER SPEED & APERTURE

Two controls affect the amount of light entering the camera and hit the image sensor-aperture and shutter velocity. The ISO affects the amount of light required to produce a proper exposure.

Opening the aperture of the lens is a diaphragm which is in or directly behind the lens itself. It affects the amount of light going through the lens and is typically composed of a series of blades that open or close depending on the selected aperture environment.

The aperture settings are commonly referred to as f-stops and have a specific numeric sequence,

such as F5.6, F7.1, F8, F11 etc. Higher f-stop levels (such as F5.6) provide a wider opening of the diaphragm, which allows more light through the lens. Lower f-stop levels (such as F11) on the other hand have a narrower gap of the diaphragm, which lets less light into the lens.

SHUTTER SPEED

Shutter speed can also affect the amount of light entering the camera by controlling how long the shutter remains open. The longer the camera shutter remains open, the more light the camera is allowed to enter; this can be achieved by using slower shutter speeds (such as 1/60). If the camera shutter is left open for a shorter time, inside the camera less light is allowed; this is accomplished by using higher shutter speeds (such as 1/250 or even higher). The shutter speeds may vary in duration from fractions of a second to several seconds.

ISO

For digital imaging ISO tests light sensitivity. The same principles apply as in film photography – the less sensitive your camera is to light, and the finer the grain, the lower the number. You can use faster shutter speed by choosing a higher ISO to freeze the movement.

DEPTH OF FIELD

A basic definition of field depth is: the zone of acceptable sharpness within a focused photograph. Aperture (f-stop), distance from the subject to the camera, and focal length of the lens on your camera are three main factors that will affect how you control the depth of field of your images.

11.2.5 TYPES OF CAMERA

DSLR CAMERA

DSLR camera is the Digital Single Lens Reflex Camera, a short form. These are the most popular camera types on the market. All experienced photographers should have one camera with DSLR in their kit. It is actually a combination of a digital imaging sensor with a single reflex camera with a single lens.

DSLR cameras come with a lens which is detachable. So, depending on the type of image, you can adjust the camera lens. If you're doing landscape photography, a medium angle lens can be installed, and a telephoto lens for wildlife photography.

DSLR camera is the Digital Single Lens Reflex Camera shorter size. This is the most common model on the market of cameras. All professional photographers will have one camera with a

DSLR in their kit. This is in fact a combination of a digital imaging sensor with a single reflex camera lens.

DSLR cameras come with a lens that is removable. So, the camera lens can be adjusted depending on the type of image. If you are doing landscape photography, a wide angle lens can be mounted and a telephoto lens for wildlife photography.

TLR CAMERA

A twin-lens reflex camera (TLR) is a type of camera of the same focal length with two objective lenses. One lens is the photographic objective or "taking lens" (the lens that takes the picture), whereas the other lens is used for the viewfinder feature, which is typically viewed at waist level from above.

The viewfinder consists, in addition to the objective, of a 45 degree mirror (the reason for the word reflex in the name), a matte focusing screen at the top of the camera, and a pop-up hood surrounding it. The two goals are connected, so the focus displayed on the focusing screen will be exactly the same as on the film.

MIRRORLESS CAMERA

If you remove a DLSR camera from the optical viewfinder, then you get the mirrorless. So, the mirrorless camera would lack the optical viewfinder. This takes away some weight from the body of the camera.

Objects that land on the image sensor can be viewed directly on the viewfinder. That makes mirrorless cameras easy to handle and lightweight.

Including Crop frame camera bodies and whole frame camera bodies are used in mirrorless cameras. Sony A7RIII is the new best mirrorless full frame camera unit. Nikon and Sony have their camera bodies mirrorless, too.

They also come with a feature for detachable lens. Since they're new to the market, the lens options are comparatively less. Nikon and Canon mounted the existing DSLR lenses onto the mirrorless cameras with adapters.

Like DSLR cameras, you can also capture the image in RAW format with the mirrorless.

POINT AND SHOOT CAMERA

Point and shoot cameras are compact cameras which are useful for people who want to take pictures of holidays or family images. These are for people not interested in photography and simply wanted to capture pictures.

They come with fixed lens and focal length variable. In a point and shoot camera you

won't be able to touch the telephoto. Hence, for documentation purposes it is the best camera. The image would be engraved in JPEG format here. AA batteries are used by most Point and Shoot Cameras. Just a handful of cameras come with custom batteries. Lightweight, point and shoot cameras are among the various types of cameras for photography, and you can easily hold them in your small pocket.

SMARTPHONE CAMERA

Almost all smartphones come with dual cameras, one for selfies at the front and one on the back. Some smartphones have even dual cameras at the back, one for portrait shots and one for regular shots. They can get DSLR on the photos with the help of software like blur effects.This feature makes smartphone cameras more attractive to people looking for a compact size of the DSLR camera features.

The increase in smartphones with strong cameras resulted in point and shoot cameras declining. You can even capture the image in RAW format with some smartphone, which you can edit later.

But don't expect to have the same amount of image information as a DSLR or a mirrorless one in this RAW format. These types of cameras are mainly appropriate for people who just want some camera in their pocket, or for people who don't want to bring separate cameras.

MEDIUM FORMAT CAMERA

Medium format cameras made use of 120 mm films in the early days. In this digital age, the film got a size comparable to the 120 mm film replaced by the digital camera sensor. Still few manufacturers produce film cameras of medium format. This comes with a larger camera sensor, at a higher cost.

So if you're looking for extremely high quality images with high noise performance then you should go for the medium format cameras. So, that's the first camera choice for fashion photographers.

FILM CAMERA

It all began with cinema cameras. During the early days of photography we use film to record images as the medium. Later, camera sensor and memory cards replaced Video.

As the feature film comes the ISO part of the image. So, we need to adjust the film rolls to our ISO specifications.

The Aperture and Shutter speed can be controlled from the camera. Now, due to lack of

demand, camera manufacturers have stopped manufacturing these kinds of cameras for picture.

INSTANT CAMERA

As the name suggests, instant cameras should be able to print images directly after recording. It was Polaroid Corporation that brought this type of cameras onto the market. Those cameras are therefore also known as Polaroid Cameras.

Instant cameras used earlier generation films, until it was replaced by paper prints. Polaroid has many different models, and other manufactures of Instant camera. Kodak and Fujifilm are other well-known Instant Cameras manufacturers.

ACTION CAMERA

Action cameras / GoPro cameras are known for their small size, which can fit in many areas where standard cameras are difficult to install.

Action camera can be used to capture images, film videos, and take time-lapse photography. They come with different mounting options. It can be mounted on helmet, wrist, body, vehicle or clothing.

There are camera housings that can be used for filming underwater images. Most cameras support 4k resolution for action.

Some action cameras enable you to connect it to your smartphone for remote triggering, and live view. GoPro and YI are some of the well-known brands of action camera.

360 DEGREE CAMERA

These days, 360 degree types of cameras are becoming popular. They can take 360-degree photographs. Even some smartphones with their extended panorama feature are able to do this job.

By using a dedicated 360-degree camera, you can take one single 360-degree photo with one click. So, you can only buy one if you're really interested in 360-degree pictures.

11.3CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

FILL IN THE BLANKS.

1. SLR camera has various pars like ……...
2. Rule of third is for……

3. Determinates of a good photograph in a camera are shutter speeds and……
4. ……..is the initial name of the camera.
5. Film camera comes under……formats camera.
6. How much your camera can see is ……..

11.4 SUMMARY

- Around since the 5th century B.C.E. the basic idea of photography has been around. It wasn't until an Iraqi scientist invented something called the camera obscura in the 11th century that the art came into being.
- The camera hadn't actually captured images back then, it just projected them onto another surface. Only upside down were the pictures, but they could be traced to make accurate sketches of real objects like houses.
- The first obscura camera used a pinhole in a tent to project an image into the darkened area from outside of the tent. Only by the 17th century did the camera obscura become small enough to be portable. Also during this time, simple lenses were introduced for focusing the light.
- Various parts of camera are Body, Viewfinder, Shutter, Shutter Release control,f Stop,Flash,Lens Ring, Focal length ring,aperture,Lens mount & focusing ring.
- Photography is something more than an art. It's more of a talent. Professional photographers take time to research and practice their craft and know just what it takes to take an eye-catching photograph. There are seven photographic elements that break down each of the things that a true artist should focus on, and these are: line, shape, shape, texture, pattern, color and space. Each one brings a picture with its own unique quality.
- A lens' focal length defines its viewing angle, and thus how much the subject will be magnified for a given photographic location.
- The perspective of an image also determines the focal length.

- Two controls affect the amount of light entering the camera and hit the image sensor-aperture and shutter velocity. The ISO affects the amount of light required to produce a proper exposure.
- DSLR camera,TLR Camera,Mirrorless Camera,Point & Shoot Camera,Instant Camera,Action Camera,Film Camera, & Smart Phone camera are different types of camera.

11.5 KEYWORDS

Aperture: Aperture refers to the opening of a lens's diaphragm through which light passes. It is calibrated in f/stops and is generally written as numbers such as 1.4, 2, 2.8, 4, 5.6, 8, 11 and 16.

Shutter Speed: Shutter speed is the length of time when the film or digital sensor inside the camera is exposed to light, also when a camera's shutter is open when taking a photograph.

SLR Camera: A single-lens reflex camera (SLR) is a camera that typically uses a mirror and prism system (hence "reflex" from the mirror's reflection) that permits the photographer to view through the lens and see exactly what will be captured.

ISO: In Digital Photography ISO measures the sensitivity of the image sensor. The same principles apply as in film photography – the lower the number the less sensitive your camera is to light and the finer the grain. By choosing a higher ISO you can use a faster shutter speed to freeze the movement.

Depth of Field: Depth of Field (DOF) is the distance between the nearest and the farthest objects that are in acceptably sharp focus in an image. The depth of field can be calculated based on focal length, distance to subject, the acceptable circle of confusion size, and aperture.

11.6 SELF-ASSESSMENT TEST

1. Suggest any 5 good tips for taking a good photograph.
2. Discuss the Depth of Field
3. How Light matters in photography?
4. **Explain different types of camera?**
5. **What is focal length?**
6. **Discuss the roe of ISO in photography?**

11.7 ANSWERS TO CHECK YOUR PROGRESS

1. Camera Obscura
2. Poloride camera
3. Focal Length
4. Aperture
5. Shutter Speed
6. Rule of Third

11.8 REFERENCES/SUGGESTED READINGS

1. Langford's Basic Photography, Focal Press New York & London
2. The Beginner's Photography Guide: Penguin random House,DK Publishing New York
3. http://www.betterphotography.in/

4. https://www.thesprucecrafts.com/brief-history-of-photography-2688527
5. https://cool.culturalheritage.org/byorg/abbey/an/an26/an26-3/an26-307.html
6. https://www.pexels.com/photo/bridge-path-straight-wooden-2257/
7. https://in.pinterest.com/pin/861735709933664304/
8. https://commons.wikimedia.org/wiki/File:Pyramid_of_Khafre_Giza_Egypt_in_2015_2.jpg
9. https://pixabay.com/photos/leaf-texture-pattern-design-4380425/
10. http://www.easybasicphotography.com/basic-picture-composition.html
11. : https://in.pinterest.com/pin/790241065858920300/
12. https://i.pinimg.com/originals/fd/83/e5/fd83e507abcf4b1a6888a256b3fcc9db.jpg
13. http://jeffbrew.com/wp-content/uploads/2012/02/beach-thirds.jpg

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: MR. VIKAS JANGRA
LESSON NO.: 12	VETTER: MR. AROHIT GOYAT
PHOTOGRAPHIC TECHNIQUES	

STRUCTURE

40.1 LEARNING OBJECTIVES

After going through this lesson, you will be able to:

40.1.1 Define about Conventional Photography.

40.1.2 Know about Photographic Techniques.

40.1.3 Acquaintabout exposing process.

40.1.4 Determine the concept of the Black and White and Colour Photography.

40.2 INTRODUCTION

Photography provides two-dimensional records of three-dimensional scenes. So In prepress department of print industry, consider it as a most significant step. Modern imaging techniques often no longer use photosensitive layers to store images, but make use of the possibilities of electronic data processing. To process images by computer they have to be converted into a computer-compatible format, i.e. digitalized; in photographic models, scanners are used.

Generally speaking, the term prepress includes all the steps required to transform an original into a state that is ready for reproduction by printing. Prepress includes the following steps: art and copy preparation (including typesetting), graphic arts photography (i.e., shooting negatives), image assembly and imposition (stripping), and platemaking. Depending on the nature of the original, other included aspects of prepress may also include halftone photography, color separation, or other procedures. Prepress should not be confused with make-ready, which is the preparation of the printing press.

This lesson aimed to discuss about the various aspect related to photographic technique - exposing, developing. Photography is a process of capturing two dimensional record of three dimensional scene. This chapter also elucidated various technical aspects associated with photography and how chemistry works behind photographic technique, Black & White photography, and Color Photography.

40.3 CONVENTIONAL PHOTOGRAPHY

In conventional Photography, a photograph is captured by means of a traditional camera, get the exposed film chemically processed and then goes on to print the picture on photographic paper. The materials which undergo a physical or chemical change are called light sensitive materials (LSM's) which are basically responsible for storing the captured image on a photographic film.

12.2.1 LIGHT SENSITIVE MATERIALS

Certain materials undergo a physical or chemical change when they are exposed to light, known as Light sensitive materials (LSM). Such materials fall into two main classes, firstly the normal photographic materials based on the silver halides, and secondly a range of sensitive materials which are used in transferring a photographic image on to a printing surface in producing letterpress, offset or gravure plates.

Gelatin is a protein obtained from the tissues, hides, cartilage, and bones of animals. Since it is of animal origin, its composition is extremely varied and consequently complicated the process of standardization. The important specifications for photographic use of gelatin are jelly strength, pH, moisture content, and metal contents of iron, lead, copper, and alumina, together with limits of ash and sulfur dioxide.

Silver Halides - The important salts of silver chloride, silver bromide, and silver iodide, which are formed by precipitation in the emulsion, are extensively used in emulsion manufacture. Silver fluoride is not used to any extent because of its fog action in combination with other silver halides.

- **Silver bromide (AgBr)** is the most widely used of the silver salts for paper and film products. It is usually the major portion of the halide salts in film and is characterized by the effect of its high speed and low fog action on the emulsion.
- **Silver iodide (AgI)** is used generally in combination with other halides. In speed, it is approximately one-third that of silver bromide.
- **Silver chloride (AgCl)** is a pure white powder, which is used primarily on paper-type emulsions for amateur use. Its speed is approximately one-eighth that of silver bromide.

Although the halides of silver are widely used, the oxalates, nitrates, tartrates, and citrates of silver have been used to a lesser degree for sensitization.

12.2.2 LSM CLASSIFICATION/ CHARACTERSITICS

The photographic emulsions, which are coated on to film, paper and glass, basically consist of microcrystals of certain silver salts dispersed in gelatin. These salts from the light sensitive component of the photographic layer and on exposure to light, they begin to release a finely divided form of metallic silver, which is black. The process begun in the camera is multiplied several million times in the process of development to produce a negative or positive, whose black areas consists of this finely divided silver.All light sensitive materials, whether films or plates can be classified according to three main variables:

i. Color Sensitivity
ii. Contrast
iii. Film Speed

These are discussed as below:

i. **Color Sensitivity:**Color sensitivity describes the area of the visible electromagnetic spectrum that causes a chemical change in a particular emulsion. A wedge spectrum is often used to show a film's reaction to light across the visible spectrum for example, blue sensitive films is only exposed by wavelengths of light from about 400-350nm. The figure wedge spectrogram shows that sensitivity of the emulsions. Wavelengths near the center of the sensitivity range, around 475nm, produce fastest chemical reaction. A greater amount of light is needed from the 400-550nm ends to obtain the same film exposure. There are three basic types of light sensitive emulsions.

a. **Blue Sensitive Materials** are often called color blind because they react to only the blue end of the spectrum. On a negative they record a high densities from blue light, but they record very little from the green or red end of the spectrum. Room light film, which can be used outside the dark room is blue light sensitive.

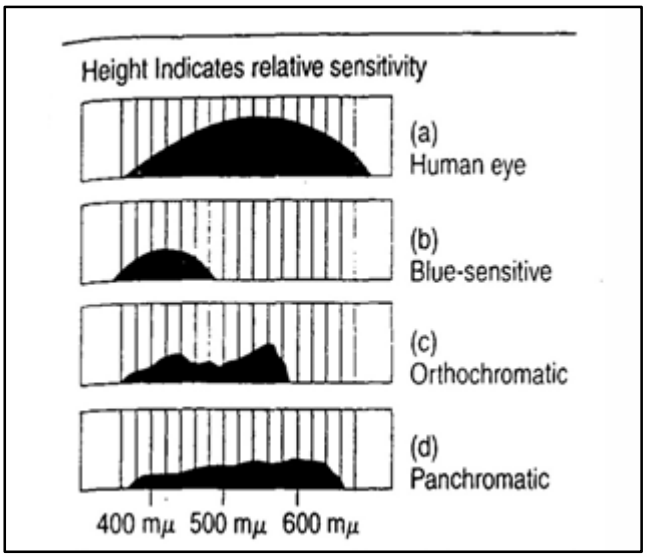


Figure: Color sensitivity of different materials

b. **Orthochromatic Material** is not red sensitive but it is sensitive to all other portions of the visible spectrum. Because they are not sensitive to red light, "orthofilms" can be safely handled under red dark room safelight. Most film manufacturers provide a wedge spectrograph for each of their films. Figure illustrates the sensitivity of one type of orthofilm. The most efficient and accurate are obtained when the peak sensitive of a film's spectrograph corresponds to the peak output of a light source.

c. **Panchromatic Material** is sensitive to all visible colors and is approximately as sensitive as the human eyes. Because they are sensitive to all of the colors that humans see, "panfilms" can be used to record variations in tone and are ideally suited for continuous tone photography. Being

sensitive to all wavelengths of light also mean that a panchromatic emulsion is exposed by any visible light that strikes it. Therefore, panfilms must be processed in total darkness.

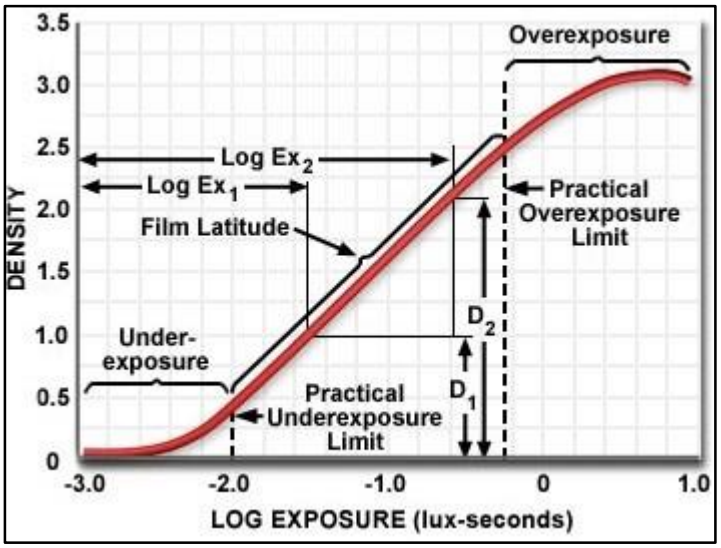


Figure: Characteristics Curve

ii. **Contrast:** Contrast, the second variable that can be used to classify light sensitive material, is a term that describes the compression or expansion of the shades or tones of original copy on the film or plate. Contrast is described by a film's **characteristic curve**, also called a logE curve, H & D curve, Density-logE curve, D-logE curve, or sensitometric curve. Film manufacturers provide characteristic curves for each of the films. These curves reveal that a very slight change in exposure provides a rapid jump in film density. The quality is ideal for printing production because the film records sharp, clean lines between image and non-image area of the original copy.

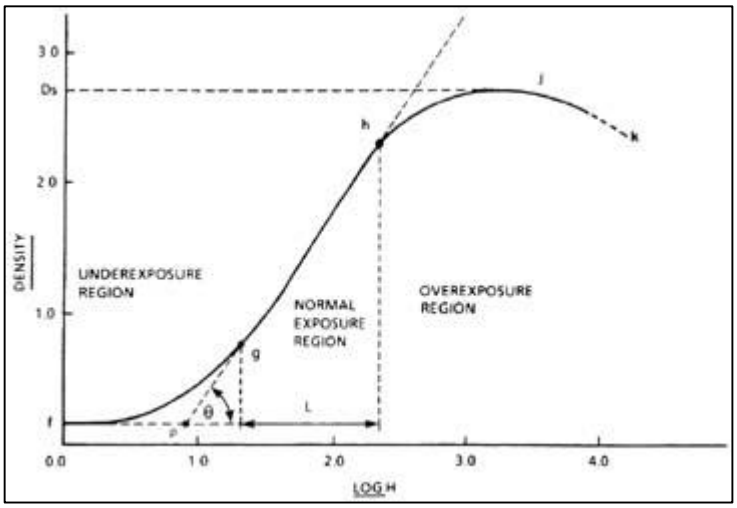


Figure: H-and-D-Curve

iii. **Film Speed:** Film speed is the third variable that can be used to classify light sensitive materials. Each film or plate material requires a different amount of light to cause a chemical change in the emulsion. Emulsions that require little light are called fast, while those that require a lot of light are called slow. Because there are so many different emulsions requiring different amounts of light, the concept of fast vs slow is meaningless, however for that reason an exposure index is assigned to each manufacturer. The ISO system applies a number scale to relative film speed-the higher the number faster the film. For example, a film with an ISO rating of 25 requires twice as much light to create the same image density as that a film rated at ISO 50. Exposure index is assigned as a function of the type of light source used to expose the film.

It's important to understand that color sensitivity, contrast and film speed are unrelated variables that cannot be compared directly. It's possible to produce films that exhibit any combination of these three characteristics.

12.2.3 PHOTOGRAPHIC FILM STRUCTURE

The structure of a light sensitive film when viewed as a cross section will be similar to the structure shown below:

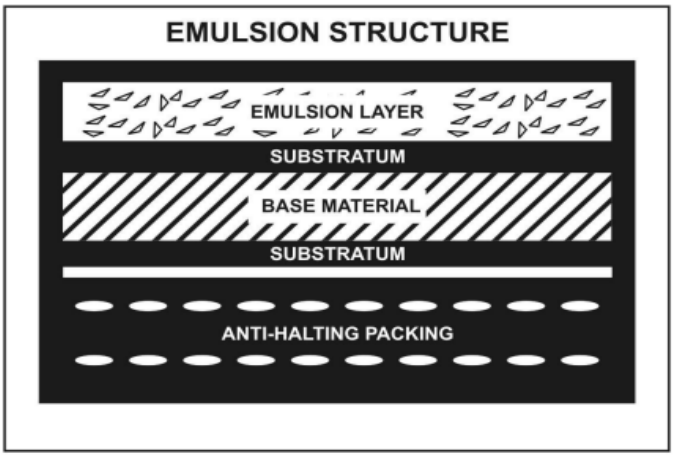


Figure: Photographic Film Structure

These are discussed in detail as below:

ii. **Anti-stress layer:** This thin top coating or super coat reinforce the emulsion layer helping to minimize scratches, abrasions and Newton's rings formed during rough film handling.

iii. **Emulsion layer:**This is the gelatin layer holding the light sensitive layer of silver halide grains. In some cases – color films, tone correcting films, x- ray films – the base is multicoated with two, three or more differing emulsions. There is a basic relationship between the grain- size and the sensitometric properties of the particular emulsion.

a. An emulsion containing large grains will react faster and more easily with light rays. Because of the large surface areas (more sensitive centers) of the light sensitive grains, this emulsion

will have a high sensitivity but accompanied by a coarse grain effect throughout the recorded image.

b. An emulsion capable of recording an original which has a long range of tonal gradations must possess grain of different sizes, resulting in an image of relatively lower contrast. This is because of the fact that some grains both large and small will become completely black and represent tones of high, medium, and low density. Conversely an emulsion consisting of virtually equal size will not record many tonal gradation. The grains will become either completely blackened or remain unexposed. This type of emulsion is used when an image of extreme contrast is required.

iv. **Base material:** There are many materials used in each category, but generally speaking paperand plastic layers are few materials used as base. The base supports the light-sensitive emulsion and, therefore must have uniform thickness without surface irregularities.

v. **Substratum layer:**Substratum is generally a weak mixture of gelatin and base material solvent. This substance is employed wherever adhesion is required.

vi. **Anti- halation backing:**Selected dyes are dissolved in gelatin and coated onto the back of the base material. These dyes absorb any light that has passed through the emulsion, arresting the reflection of these rays which would result in a second exposure being recorded on the emulsion. This backing layer also stops the film curling and is doing so ensures that the emulsion lies flat during exposure. In some cases the absorption of the unwanted light is increased by tinting the base material with gray color.

12.2.4CHEMISTRY OF PHOTOGRAPHY

The chemistry of photography is a wide discipline; some of its important fundamental aspects are enlisted here. Various important aspects are:

i. Photographic Emulsion: The silver emulsion used on sensitized materials consists of a colloid such as gelatin, silver halides, and additives for producing certain effects.

Additives to Emulsions: The silver salts are color sensitive inherently to the blue portions of the spectrum only. To increase this sensitivity to red and green, color-sensitizing dyes are added to the photographic emulsion. These sensitizing dyes are absorbed by the silver halide, and the increase in color sensitivity by this process is referred to as optical sensitization.

To obtain special effects such as an increase in speed, prevention of fog, and control of gamma, all emulsions contain certain additives to achieve these desired effects. The specific chemical reactions and functions of these additives are complex.

Preparation of the Photographic Emulsion: The technique of manufacture for photographic emulsions has long been considered a “trade secret,” but the basic procedure is well-known and

consists essentially of the following:

I. Soaking and dissolving a portion of the gelatin.

II. Addition of bromides and iodides used in precipitation of the silver halide

III. Addition of silver salts, causing the precipitation of the silver halide. (This process is called emulsification.)

IV. Recrystallization of emulsion by heating. (This is commonly referred to as the "first ripening".)

V. Addition of the remaining gelatin, and chilling.

VI. Formation of "noodles" by forcing the chilled gelatin through a wire screen

VII. Washing, to remove the emulsion of unwanted salts.

VIII. Reheating, which is referred to as after-ripening or second-ripening, to recrystallize the silver salts.

IX. Addition of special chemicals, such as sensitizing dyes, preservatives, anti-fog agents, stabilizers, etc.

Although the preceding list of operations is considered a basic procedure, there are endless variations that will affect the finished product. Purity of gelatin, agitation, salt concentration, degree of heat, and procedure of addition of silver salts are just a very few of the factors that make emulsion manufacture a complex procedure.

ii. Developer Solutions: The latent or invisible image in the exposed film emulsion is made visible by a process which is termed development. Chemical development is the reduction of the exposed silver halides in the emulsion to blackened metallic silver. The process is performed in solutions that contains various mixtures of chemicals which has the property of reducing the exposed silver salt to metallic silver. This solution is called a Developer. Developers are sold either in ready mixed powder forms or in made up stock solutions which have only to be dissolved in water for use. During exposure, light affects the photographic emulsion by forming a latent image. The purpose of developer is to convert the latent image into visible image. This is accomplished by reduction of the silver halide to black metallic silver with the use of a solution referred to as a developer. The developing solution consists of:

- A solvent, such as water.
- A developing or reducing agent, such as metol or hydroquinone.
- A preservative, such as sodium sulfite.
- A restrainer, such as potassium bromide.
- An accelerator or alkali, such as sodium hydroxide.
- Miscellaneous additives.

Chemicals in a developer function according to the above constituents; the difference among developers is caused by the different types or proportions of these chemicals to achieve the desired developing action.

Constituents of a Developer: A **developer consists a number of ingredients. These are enlisted as below:**

I. **Solvents**: Almost all developers use water as their solvent, although some color-coupling developers use other solvents in combination with water. The water used for developers should be of fairly high purity and should not contain large amounts of calcium or chloride salts.

II. **The Developing Agent**: Organic chemicals are widely used as developing agents and are characterized as strong reducing agents containing the hydroxyl (OH) and amino (-NH2) groups in varying proportions. The most important of this group is paradihydroxybenzene (hydroquinone) andmonomethyl paraminophenol (Metol). Hydroquinone is a slow but powerful developer, taking longer time to show a visible image on the film but gaining density much more rapidly over a prolonged period of time. Metol is a much more energetic agent, showing an image rapidly but building density slowly. The combination of Metol and hydroquinone in developers is excellent, for each chemical helps to correct the shortcomings of the other. Varying combinations of these two agents are used in the most popular types of paper and film developers.

III. **The Preservative**: Due to the high reducing action of the developing agent, a preservative (or antioxidant) is necessary to prevent or control developer oxidation. Sodium sulfite is the most common chemical in this group. The sulfite, in addition to acting as an antioxidant, also prevents the formation of staining developer products, acts as a silver solvent, and in some cases serves as a weak alkali, which increases the rate of development.

IV. **Restrainer**: Potassium bromide is used as a restrainer in the developer. The action of potassium bromide in a developing solution is such that it reduces the ionization of the silver salt, thereby controlling (restraining) development. This action, however, is greater on the fog image than on the denser image. Restrainer is used to control the fog image.

V. **Accelerator**: In order to increase the pH of the developing solutions, thereby increasing the ionization of the developing agent, the addition of an alkali, or accelerator is important in developing formulas. The alkali also has the dual function of absorbing the bromine ions formed by the action of the developing agent of the silver salts. The more important types of alkalis include the carbonates and hydroxides of sodium and potassium. Paraformaldehyde is the common type of alkali control used in “lith” type developers due to its ability to produce extreme contrast.

VI. **Miscellaneous Additives**: There are a number of additives to developing solutions each designed to achieve some desired effect. The most common in use are the following:

- Wetting agent, to permit the rapid penetration of developer into the gelatin.
- Desensitizer, to reduce the color sensitivity of the emulsion without affecting its speed. Phenosafranine and the pina kryptols belong in this group of chemicals.

- Silver solvent, for reduction of grain size, include sodium thiocyanate and ammonium chloride.
- Other chemicals, used to increase gamma, control water impurities, and permit the use of developers environments characterized by extremes of temperature.

VII. Action of Development: The action of the developer on the photographic emulsion is a complex process to understand. Howeverin the case of a hydroquinone developer, the reactions proceed as follows:

- The alkali dissociates the hydroquinone, with the liberation of ions of the developing agent in solution.
- The hydroquinone ion reacts with the silver bromide yielding quinone and ions of silver and bromine.
- The quinone then reacts with sodium sulfite to form sodium hydroquinone monosulfonate and sodium hydroxide.
- The sodium hydroquinone monosulfonate is oxidized to quinone monosulfonate, which in turn reacts with sulfite to form sodium hydroquinone disulfonate. The latter chemical is practically inert as a developer.
- As the development proceeds, hydroquinone ionizes. At the same time, hydrogen ions are formed; and bromine ions are released into the solution, which is equivalent to adding potassium bromide to the developer.

Basically this reaction may be simplified by saying that the developing agent is gradually used up and during this process forms complex developing agent salts, which act on the image to a lesser degree. The solution then reaches a point when the developing agent is completely exhausted and the bromine ions formed by the silver bromide restrain development and will not produce sufficient density in the negative or positive.

VIII. Stop Bath Solutions: After a negative or print has been developed, it is usual to rinse it in clean water for a minute or so to halt development before transferring it to the fixing bath. A solution of 2-5% acid or citric acid, or potassium meta-bisulphite is commonly used for this purpose. It immediately neutralizes the alkalinity and thus the activity of the developer. It is classified into three types of rinse baths they are:

a. **Water rinse bath:** It helps to slow down the action of the reducing agents and remove the excess developer from the emulsion.
b. **Hardening rinse bath:** It is used to harden the emulsion when processing at high temperature (for tropical processing).
c. **Acid rinse bath:** It always be used after a high speed developer (for weather processing). The acid stop bath also helps to:
    - Minimizes the formation of dichloric fog
    - Removes calcium scum

- Preserves the acidity and hardening characteristics
- Prevents excessive swelling of the gelatin.

IX. Fixer Solutions: When development is completed, those areas not affected by exposure or development have to be removed to make the image on the film permanent. These unexposed and undeveloped areas are removed from the film by use of a fixing bath. In addition to its reaction of dissolving the unexposed and undeveloped silver salts, the fixing bath also serves two other basic purposes: it neutralizes developer alkali, thereby stopping developer action and eliminating oxidation staining, and it sufficiently hardens the emulsion, preventing scratches and washing away of the gelatin image.

X. Composition and Reactions of the Fixing Bath: The fixing bath contains a number of chemicals each acting on the silver image in some manner. The formulation of a typical bath used for general purposes on lith films would consist of the following:

- A solvent, such as water.
- A silver halide solvent, such as sodium thiosulfate (hypo), which is used to dissolve the silver halides. Generally emulsions with large grain size will clear much faster if ammonium thiosulfate is used. This chemical is the common ingredient of the liquid-type fixers.
- A stabilizer, such as sodium sulfite. In this reaction, the sodium sulfite combines with the ionized sulfur of the sodium thiosulfate to form a complex sulfite salt, thereby stabilizing the bath and preventing formation of a sulfur precipitate.
- An acid, such as acetic acid, to bring the bath to the pH necessary to neutralize alkalinity caused during development.
- A buffer, such as boric acid, to limit the change of pH of the fixing bath solution, thereby preventing formation of aluminum precipitates.
- A hardener, such as potassium alum. In this reaction, the hardener toughens the emulsion so that the resulting physical hardness is such that it will not be affected by washing or normal handling when the film is dry. The hardening action of chrome alum is greater than that of the potassium salt, but since it has a tendency to form a sludge more rapidly, it is not used too widely.

XI. Reducers: The action of a reducer is essentially that of an oxidizing agent: oxidizing the metallic silver to form a soluble silver salt. In some cases, the silver salt is insoluble in water, and the solution must contain another chemical that can convert the silver salt into soluble silver compound.

A common reducer is Farmer's reducer, which is a mixture of potassium ferricyanide and sodium thiosulfate. The silver reacts with the potassium salt to form silver ferrocyanide. At the same time, the iron in the ferricyanide ion is reduced to form ferrocyanide ions. Then the sodium thiosulfate reacts with the insoluble silver ferrocyanide, converting it into soluble

complex Ions.

Another reducer is a mixture of iodine and sodium or potassium cyanide. Potassium iodide reacts with the iodine to form potassium iodate. The latter substance oxidizes the silver. Silver iodide is very insoluble in water but is soluble in a potassium cyanide solution. The silver iodide is thus converted into a silver cyanide complex ion, which is soluble in water. This type of reducer is sometimes used for flat etching of halftone positives.

XII. Reduction: Basically three types of reduction are used. They are un-proportional, proportional and super proportional reduction.

- **Un-proportional reduction:**This is carried out in farmers' reducer, a two stock solution reducer made from mixing one part of the potassium ferricyanide solution with two parts of the sodium thiosulphate in three parts of water. The highlight tones or the thinnest lines are reduced first. The effect of this reducer is increased or decreased by changing the amount of potassium ferricyanide and sodium thiosulphate in relation to one another. Excess amount of ferricyanide will lead to more violent reducing action.
- **Proportional reduction:**This takes place when the solutions action is in proportion to the amount of silver. Shadow areas (densely populated areas of black silver) are reduced faster than the high light areas. A most useful proportional reducer is old Tri-mask or multi mask bleach fixing solution which may be diluted to achieve the desired degree of proportional reduction.
- **Super proportional reduction:**These rely on a catalytic reaction which is increased in proportion to the amount of silver present. A very effective of this type can be prepared in a two stock solution form by mixing ammonium persulphate in water. This is the reducing solution while the second solution of sodium sulphite is used as a stop bath arresting the reducing agent.

XIII. Intensifiers: There are numerous intensification methods - lead, copper, silver and mercury compounds are used as intensification compounds to reinforce the image areas which appears too weak for subsequent printing down operation. The most popular compound seems to be mercuric chloride. The emulsion have to be thoroughly washed in warm water. The emulsion is now immersed in the mercuric chloride potassium bromide solution where it will be seen to bleach out producing a white appearance throughout the depth of the image areas. Once this has been achieved the emulsion is washed and finally reblackened in a 10% solution of ammonia.

XIV. Washing Solutions: This is really the third stage of fixing, the removal of water soluble salts now present in the unexposed areas of the emulsion. A required supply of clean running water is needed to wash the processed emulsion. We have to completely change the water every 5 minutes ensuring that unwanted salts are being continuously removed. Washing should be continued for a period of 30 minutes ending with the addition of few drops of wetting agents to facilitate even drainage. The washed emulsion can be squeezed or wiped carefully with a chamois leather.

XV. Drying: To retain dimensional stability in the base material, drying should take place by the circulation of cool air. Rapid drying may be achieved in a drying cabinet with a maximum internal temperature 40° c (104° F) and relative humidity of 55%.

12.2.5 BLACK AND WHITE PHOTOGRAPHY

Black and white (B&W) photography is the art in which different tones of grey are used ranging from white to dark in order to create images. The word 'monochrome' means 'having single color.' So, monochrome photos have only one color tint, assuming it is just one color. Monochromatic photography is the photography where the captured/recorded image show different amount of the light, but not a different hue. This photography includes different formats of photography. Black and white photography is also a monochromatic photography in which images are produced on a neutral grey scale. This scale ranges from black to white. Also other hues besides grey includes sepia, brown and cyan used in monochromatic photography. In past days this photography was mostly used for artistic purpose. In modern days panchromatic films (also known as Black and White film) record the entire visible spectrum. Now a days black and white photography is considered subtle and less realistic as comparison to Color photography.

Black and White Photography

Monochromatic Photography

It is evident from the pictures of 'Black and White Photography' and 'Monochromatic Photography' that it need not to be necessary that any monochromatic photograph is always black and white photograph. But black and white photograph is monochromatic photograph.

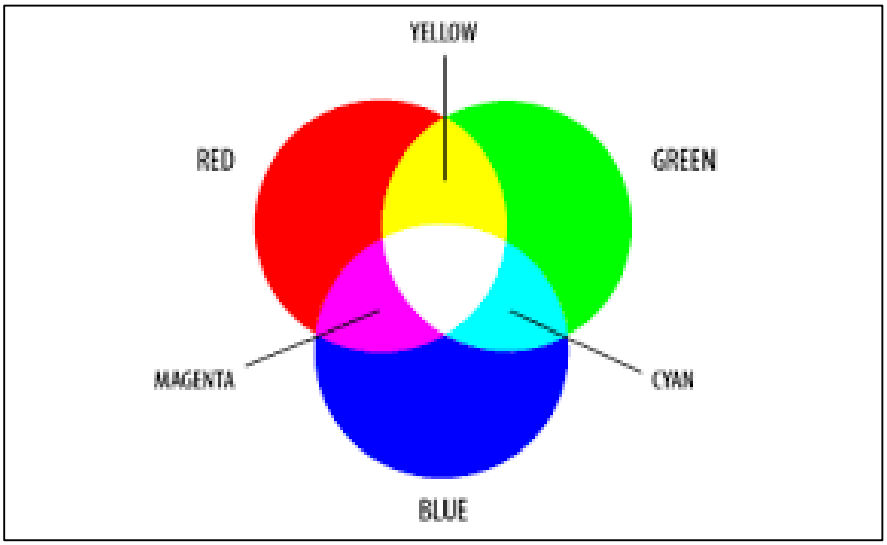
12.2.6 COLOR PHOTOGRAPHY

Color photography is the recording/capturing which is capable of reproducing color. In case of black and white photography only one color is recorded and media is capable of showing shades of grey color. In case of color photography, there are electronic color sensors or light sensitive materials which captures information of color at the time of exposure. This is possible by analyzing the visible spectrum which is dominated in three color mainly red, green and blue. The three color method was first suggested by James Clerk Maxwell in 1855.

The captured/recorded information is used to reproduce the original color by mixing the red, green and blue colors in different proportions. There are two different models for reproducing color.

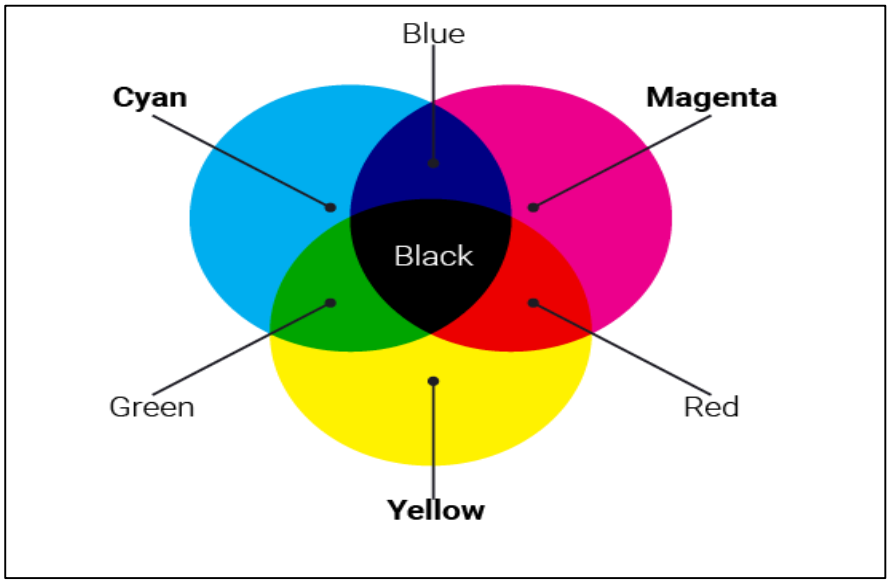
First Colored Photograph

a. **Additive Model:**In additive color model Red, Green and Blue are the main ingredients. In order to produce secondary color, these color are mixed with each other. Base color for additive model 'White'. The common applications based on this model are LED, Monitor, Mobile screen etc.This model is also called RGB Color Model.



RGB Color Model

b. **Subtractive Model:**In this case Cyan, Magenta and Yellow are main components and mixed in order to produce Red, Green and Blue color. Base color for subtractive model is 'Black' color. Black color is known as key color. This model is also called CMY Color Model.



CMY Color Model

12.3 CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

CHOOSE THE RIGHT OPTION.

1. Which of the following process provides two-dimensional records of three-dimensional scenes?

a) Photography

b) Printing

c) Light Sensitive Materials

d) All of these.

2. Certain materials undergo a physical or chemical change when they are exposed to light, known as _____.

a) Photography

b) Light sensitive materials (LSM).

c) Exposing

d) None of theses

3. Which one of the following an example of Light Sensitive Material?

a) Bisulphite

b) Sodium thiosulphste

c) Silver Halide

d) Substratum

4. The area of the visible electromagnetic spectrum that causes a chemical change in a particular emulsion.

a) Photography

b) Contrast

c) Film Speed

d) Color Sensitivity

5. Materials whichare often called color blind because they react to only the blue end of the spectrum.

a)Blue Sensitive Materials

b) Orthochromatic Material

c) Panchromatic Material

d) All the above

6. Contrast is described by a film's _____ curve, also called a log E curve, H & D curve, Density-log E curve, D-log E curve.

a) Gamma Curve

b) Film Exposing Curve

c) Characteristic Curve

d) All the above

7. Material which is not red sensitive but it is sensitive to all other portions of the visible spectrum. Because they are not sensitive to red light, can be safely handled under red dark room safelight.

a) Blue Sensitive Materials

b) Panchromatic Material

c) Orthochromatic Material

d) All the above

8. This is the gelatin layer holding the light sensitive layer of silver halide grains.

a) Anti-stress Layer

b) Emulsion Layer

c) Substrate Layer

d) Anti- halation

9. The action of a reducer is essentially that of an oxidizing agent: oxidizing the metallic silver to form a soluble silver salt.

a) Accelerator

b) Restrainer

c) Reducers

d) Stop Bath

10. In order to increase the pH of the developing solutions, thereby increasing the ionization of the developing agent, the addition of an alkali is important in developing formulas.

a) Accelerator

b) Restrainer

c) Reducers

d) Stop Bath

12.4 SUMMARY

- Photography provides two-dimensional records of three-dimensional scenes. So it is considered as the most significant step in prepress department of print industry.
- Conventional Photography is a process in which a photograph is captured by using a traditional camera. The photographic film is exposed, chemically processed and then goes on to print the picture on photographic paper.
- Each film or plate material requires a different amount of light to cause a chemical change in the emulsion. Emulsions that require little light are called fast, while those that require a lot of light are called slow.
- The cross-sectional view of any photographic film includes different layers which includes Anti-stress layer, Emulsion layer, Base material, Substratum layer and Anti- halation backing. Each one of these have a particular fiction.

12.5 KEY WORDS

Light sensitive materials (LSM): The materials which undergo a physical or chemical change are called light sensitive materials which are basically responsible for storing the captured image on a photographic film.

All light sensitive materials, whether films or plates can be classified according to three main variables Color Sensitivity, Contrast and Film Speed.

Color Sensitivity: It describes the portion of the visible electromagnetic spectrum that causes a chemical change in a particular emulsion. A wedge spectrum is often used to express how film reacts to light across the visible spectrum i.e. from 400nm – 700nm.

Contrast: It can also be used to classify light sensitive material, is a term that describes the compression or expansion of the shades or tones of original copy on the film or plate. Contrast is described by a film's **characteristic curve**, also called a log E curve, H & D curve, Density-log E curve, D-log E curve, or sensitometric curve.

Film Speed: Each film or plate material requires a different amount of light to cause a chemical change in the emulsion. Emulsions that require little light are called fast, while those that require a lot of light are called slow.

Blue Sensitive Materials are often called color blind because they react to only the blue end of the spectrum. On a negative they record a high densities from blue light, but they record very little from the green or red end of the spectrum.

Orthochromatic Material is not red sensitive but it is sensitive to all other portions of the visible spectrum. Because they are not sensitive to red light, "orthofilms" can be safely handled under red dark room safelight.

Panchromatic Material is sensitive to all visible colors and is approximately as sensitive as the human eyes. Because they are sensitive to all of the colors that humans see, "pan-films" can be used to record variations in tone and are ideally suited for continuous tone photography.

Photographic Film Structure: The cross-sectional view of any photographic film includes different layers which includes Anti-stress layer, Emulsion layer, Base material, Substratum layer and Anti-halation backing. Each one of these have a particular fiction.

Anti-stress Layer: This is the thin uppermost top coating or super coat reinforce the emulsion layer helping to minimize scratches, abrasions and Newton's rings formed during rough film handling.

Base material: The base supports the light-sensitive emulsion and, therefore must have uniform thickness without surface irregularities. Generally there are paper and plastic layers used as materials for base.

Anti- halation backing: This backing layer not only stops the film curling and but ensures that the emulsion also lies flat during exposure. During some cases the absorption of the unwanted light is increased by tinting the base material with gray color.

12.6 SELF-ASSESSMENT TEST

111. Define Photography. How it is important?
112. Explain concept of conventional photography.
113. What do you mean by LSM i.e. Light Sensitive Material? Enlist them.
114. How do we classify LSM i.e. Light Sensitive Materials?
115. Define the term Color sensitivity. Explain various color sensitive materials.
116. What are important aspects taken into account while considering LSM?
117. Differentiate Blue Sensitive Materials, Orthochromatic Material and Panchromatic Material.
118. Explain in detail about the cross sectional view of Photographic Film.
119. What do you mean by Chemistry of Photography? What are the various steps categorized in this?
120. What is Photographic Emulsion? Explain chemistry behind it.
121. Explain the process for Preparation of the Photographic Emulsion.

122. What is Developer Solutions? Explain chemistry involved in it.
123. What are the main Constituents of a Developer? Explain their role as a developer.
124. What is main function of Accelerator as Constituents of a Developer?
125. What are the main Stop Bath Solutions used for Photographic processing.
126. Explain the role of Fixer Solutions during processing. Elaborate Composition and Reactions of the Fixing Bath.
127. What is main function of Reducers in Chemistry of Photography?

12.7 ANSWERS TO CHECK YOUR PROGRESS

1. a) Photography
2. b) Light sensitive materials (LSM)
3. c) Silver Halide
4. d) Color Sensitivity
5. a) Blue Sensitive Materials
6. c) Characteristic Curve
7. c) Orthochromatic Material
8. b) Emulsion Layer
9. c) Reducers
10. a) Accelerator

12.8 REFERENCES/SUGGESTED READINGS

1. Printing Technology byMicheal J Adam, David D Faux
2. Digital Image Processing by Rafael C. Gonzalez, Richards E Woods
3. https://micro.magnet.fsu.edu/
4. http://www.answers.com/
5. http://www.ndt-od.org/education/resources
6. The Textbook of Digital Photography by Dennis P. Curtin
7. https://www.liberaldictionary.com/h-and-d-curve
8. https://photographylife.com/
9. https://en.wikipedia.org/
10. www.nixsensor.com
11. https://www.mediafrontier.ch

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: DR. UMESH C. PATHAK
LESSON NO.: 13	VETTER: PROF. HARISH ARYA
AUDIO-VISUAL PRODUCTION	

STRUCTURE

13.0 LEARNING OBJECTIVES

After reading this lesson you will be able to:

- **Understand the concept of Audio-Visual Production.**
- **Determine the elements of Audio -Visual Production.**
- **Produce Audio and Video Programmes.**
- **Describe various techniques and stages of Audio -Visual Production.**

13.1 INTRODUCTION

If trying to relay a message or idea, doing so face-to - face is typically simpler and more effective than on paper or by telephone. That's because there are many weaknesses in written or audio communication alone that might muddle the message or cause confusion. Audiovisual contact breaks down the conventional barriers to writing to ensure the audience understands them.

AV communication is, in a very simple definition, the use of a medium that combines audio and visual content with the purpose of transmitting certain information to the public.

And that is a lovely and exciting part of communicating! Combining sound with picture gives you such a variety of messages that you can send! Just imagine how it would feel if you saw that Titanic scene where Jack is holding Rose on the ship's prow, and clown music was playing throughout! All the strength and emotional impact that the scene had would be gone, and the viewer would get a whole new message

Audio visual communication is a productive form of communication. Using sound and lighting equipment improves communication by heightening the awareness of your audience's sight and hearing.

Those audiences that use more of their senses to engage in events remember those events for a longer time period. Their retention of event material 3 days after an event, when the information is presented using creative AV, is 6 times greater. Not everyone is an auditory learner who can get information from lectures and speeches. Many people are visual learners who are better at responding to still or moving images. It is the combination of sight and sound that promotes and strengthens this retention, and enables an audience to connect better with the brand or message. AV makes mentally open and nostalgic of knowledge simpler for the audience after they have left.

13.2 AUDIO - VISUAL PRODUCTION

Audio visual equipment allows the presenter to engage the audience, provide contextual detail, reinforce main points, highlight what is said, explain points and generate anticipation.

There should be following elements in any audio- visual production to make it worth.

CLARITY

Clarity is one of the main advantages audiovisual media has for communication. You know the type of tone and mood used in the letter when you send an email or write a message, but it may come across differently to the recipient. Audiovisual communication helps both parties to detect facial expressions and gestures, hear voice sounds and inflections, and use audio and visual cues to explain the meanings and roles of each other.

SPEED

About 100 years ago, it sometimes took weeks and months to communicate via written or word-of - mouth correspondence. In comparison, with the use of audio visual media such as video phones, webcams and face-to - face meetings, the communication today is immediate.

RETENTION

When combined, audio and visual indications increase retention of messages. According to the United States Department of Labor, when only orally viewed, a mere 10 percent of the information is preserved and only 35 percent of the information is preserved when only visually viewed. But 65 per cent of that information is retained when audio and visual tools are combined to present a message or idea. Presentation software and video conferencing can be useful tools in meetings and seminars as the information is interpreted and processed more efficiently by the audience than through more conventional methods.

CONTRAST

The elements in the composition have noticeably different visual properties than others. Created using colour, size, shape, orientation variables.

REPETITION

The elements inside the composition have clear visual characteristics. Created by means of colour, size, shape, and direction.

ALIGNMENT

Elements are arranged within the composition to create an imaginary line. Uses the position variable.

PROXIMITY

Elements within the space of a composition are close together. Uses the position variable.

HIERARCHY

A dominant-subordinate relationship among elements.

GROUPING

A relationship that specifies the elements to be associated together.

SEQUENCE

A relationship among elements that specifies first, second, third.

Now that you have seen these principles of visual communication demonstrated using simple shapes and without any context, it is time to apply this thinking to a real production.

13.2.1 VISUAL COMMUNICATION

The transmission of information and ideas using symbols and images is visual communication. It is thought to be the sort that most people rely on, like signs, graphic designs, movies, typography, and countless other examples. Semiotics is the study of symbols and visual communication.

As the name suggests, visual communication is via visual aid and is described as conveying ideas and information in forms that can be read or looked at. Visual meaning is a film clip or illustration which is used to convey a story or message. The short clip from an old news broadcast is one example of a visual.

Imagine you are on holiday in a foreign place, and you get lost while driving. If you were home you could stop and ask for directions from others. But here, you are not very good at speaking the language, so seeking directions won't do much good. Alternatively, you can rely on a map, using landmarks, routes and familiar signs that will lead you back to your hotel successfully. You have found your way back in this scenario almost entirely through visual contact.

In Video production You control: Position, color, size, shape & orientation.

In Video production You create: Contrast, repetition, alignment & proximity.

In Video production You communicate: Hierarchy grouping sequence.

13.2.2 COMPONENTS OF AUDIO RECORDING

Radio studio is a room where radio programmes are recorded.

For producing a radio programme, you need a ‘sound proof’ studio where human voice can be recorded or broadcast in the best manner.

For our voice to be recorded in a studio, we use a microphone.

They amplify or in other words, increase the volume of your voice.

When you speak before a microphone, you don’t have to shout. You speak normally and it will be made louder if you use a loudspeaker to listen to.

When we think of radio, the microphone is the most important element using which you present your programme.

Sound effects in a radio programme give meaning and sense of location. It adds realism to a programme and helps a listener to use imagination. Think of a crowded market or temple. If you are creating that scene in a radio programme, you do not have to go to a crowded market or temple to record.

Well, you can record those sounds and use them. But in most cases, you usesound effects which are already recorded. Sound effects can be used in twoways:

(a) Spot effects or effects that are created as we speak and

(b) Recorded sound effects

You can also create sound effects.

You can use two coconut shells to produce the sound effects of the sounds of horses' hooves.

Take a piece of paper or aluminum wrapper and crush them in front of a microphone. Record the sound and hear.

It will sound as if fire is raging. You can think and create many such sound effects.

However, there is a word of caution. If you record an actual door opening, you may not get the real feeling of a door opening when you record it. What matters is what it sounds like and not what it is.

13.2.3 MUSIC

Music is the soul of radio. It is used in different ways on radio as already discussed in the earlier lesson.

- Film songs and classical music programmes are independent programmes on radio.
- Music is also used as signature tunes or theme music of various radio programmes.
- Music adds colour and life to any spoken word programme.
- Music can break monotony.
- Music is used to give the desired effect of happy or unhappy situations, fear or joy.
- Music can suggest scenes and locations. For example, you have to create a bright early morning situation. This can be done by playing a pleasing note on the flute along with the sound of chirping birds.
- If you listen to someone speaking to you on phone, the
- Voice would not sound normal. This sort of effect called distort is produced using technology.
- Sometimes distort is used along with echo. Think of someone speaking from a mine 100 feet below the earth. To make it realistic, distort and echo is used.

13.2.4 HUMAN VOICE

- The main stay in any radio programme is the human voice.
- Think of the voice of an announcer or newsreader on radio. You often find them very pleasant and nice to listen to. That is because of the quality of their voice and the proper use of it.

- There are two aspects of the use of human voice in radio production. Firstly, there has to be a well written script to be spoken and then someone has to speak or read it before a microphone in a studio
- Script is the backbone of a radio programme. A good script can enhance or spoil your programme. It is examined to make it suitable for broadcast.
- Script is examined according to the principles of writing for radio or in other words 'for the ear'.

13.2.5PRODUCTION

Production is the actual process of recording and editing a radio programme. Proper studios, microphones and computers are required to record and edit the programme.The Audio-visual production process is broken into three simple stages:

- Pre-production
- Production
- Post-production

PRE-PRODUCTION

First, pre-production starts when development of scripts begins. It includes all that happens before shooting begins: project launch, analysis, writing scripts and story boarding, recruiting, hiring crews, location scouting and locking, post-production scheduling, and more. Everything and everything relating to the logistics of a video production is coordinated from scratch based on the script. Therefore everything has to be in place before the photography theory begins.

Pre-production may have following elements:

- Project script
- Production schedule
- Script development
- Storyboards
- Graphics concepts
- Location scouting
- Prop and wardrobe identification and preparation
- Post-production preparation

PRODUCTION

Production is when all of the planning comes together during script development and pre-production. "Action on that!"Once the cameras roll and the fun starts, it's named. A professional crew that produces video has an eye for detail. They should be meticulous about lighting, have

a tendency to capture great bites of sound during interviews, direct talent and capture relevant and beautiful B-rolls. Likewise, magic works for our animators and graphic designers – making the best animations and graphics to reflect your brand.

POST PRODUCTION

Post-production, eventually. The final stage of production, in other words,. This is when the production team settles in and assembles the captured video and audio recordings according to the script. Collectively, the final piece is pulled together by graphics, music, sound effects, visual effects, colour correction, audio sweetening and sound design.

Ultimately, producing high quality professional video requires an experienced team, sound pre-production plans and project management expertise, a established production process and a quality assurance program. This combined effort will result in a video that fits your goals and above all meets your standards.

13.2.6 SKILLS REQUIRED FOR RADIO PRESENTER, ANCHOR OR RADIO JOCKEY

A successful Radio Announcer is expected to communicate in a pleasing voice, pronounce words, according to accepted standards and clearly articulate the sounds of his concerned language. He may have to play different roles like a narrator, an interviewer, a communicator, a compere etc. while on duty he/she may be asked to present scripts, take part in features or plays, present special music programmes etc., apart from handling the technical equipments in the broadcast studio.

We know, the radio announcer nowadays is also called a media performer, who is essentially a product of the electronic age. In other words, an announcer is a storyteller, who speaks directly to the audience and describes the events which the audience cannot see. In this vast country, radio has allowed its announcers for the first time in history to describe to millions of listeners, events as occurring and things as changing. Their responsibility is substantial and because announcers usually make direct presentations to their audience they are supposed to be effective, intelligent and economical in using the language. So one who acquires the skills of communication and thorough knowledge of the language has all chances to become a successful announcer. A successful radio announcer should has:

- Soothing and impact voice
- Voice modulation
- Clear diction

- Command over the language and vocabulary
- Control over voice pitch
- Good sense of humor
- Creativity
- Spontaneity
- Knowledge of music and current affairs
- Mimicry
- Well spoken in local dialects
- Diplomatic
- Punctual
- Friendly and approachable attitude
- Witty
- Express himself/herself confidently and
- Communicate ideas clearly, using oral organs.

13.2.7 SOUND PRODUCTION

SOUND

The development of sound depends on a material body's vibration, with the vibration being transmitted to the medium that carries the sound away from the producer of sound. For example, the vibrating violin string causes the violin's body to vibrate; the "back-and-forth" motion of the violin's body parts causes the air to vibrate in contact with it. That is, the movement of the violin body causes slight changes in the air pressure, and these are carried out into the air surrounding the instrument. The slight changes in air density are propagated in the direction of the sound's movement as the sound is carried away.

The frequencies involved in speech usually range from about 100 to 10,000 Hz. However in the frequency range from around 20 to 18,000 Hz, humans can detect sounds. These outer limits vary from person to person, by age, and by sound loudness.

We have already discussed above about sound production in Audio production. A sound Production needs few important elements which are as follow:

Acoustics: Studio with microphone, recording equipments.

Human Voice: Male, female and child voice

Music: Music, Song, BackgroundMusic, Sound effects etc.

13.2.8 SLIDE PRODUCTIONS

A slide show may be a purely visual or artistic value presentation of pictures, often not accompanied by explanation or text, or it may be used to explain or enhance details, ideas, observations, solutions or suggestions delivered orally.

Multi-image is the now increasingly common tradition and industry of using 35 mm slides projected onto one or more displays by single or multiple slide projectors in conjunction with an audio voice-over or music track. Also known as multi-image slide presentations, slide shows multi-image productions are a specific form of multimedia or audiovisual production.

Slide, usually used to convey the message effectively with a short duration of time.

Production of slide is similar to visual production steps may be different.

13.2.9 RECORDING EQUIPMENTS

A microphone is a transducer or sensor which converts sound into an electrical signal. Microphones are used in many applications such as telephones, tape recorders, hearing aids, motion picture production, live and filmed audio processing, megaphones, radio and television broadcasting, and in computers for voice recording.

Different microphone types have different ways to transform energy, but all have one thing in common: the diaphragm.

This is a thin piece of material that vibrates when it is struck by sound waves (such as paper, plastic or aluminum).

The diaphragm is located at the head of the microphone in a typical hand-held microphone like the one given below. When the diaphragm vibrates, it causes vibration of other components in the microphone. Such movements are converted into an electric current that is the audio signal.

13.2.10 TYPES OF MICROPHONE

Microphones convert sound energy into electrical signals. In the professional broadcasting field, microphones have to be capable of giving the highest fidelity of reproduction over audio bandwidth. The microphone should not add or subtract the amplitude or frequency of the sound during conversion.Microphones can be categorised on the basis of design and on the basis of pick-up patterns or directionality.On the basis of pick-up patterns or directionality, there are three types of microphones.

1. Unidirectional Microphone
2. Bi-Directional Microphone
3. Omni Directional Microphone

1. UNIDIRECTIONAL

Unidirectional microphone micks up sound predominantly from one direction. This includes cardioid, super-cardioid, hyper-cardioid and shotgun microphones.

By removing all the ambient noise, unidirectional sound can sometimes be a little unnatural. It may help to add a discreet audio bed from another mic (i.e. constant background noise at a low level).

You need to be careful to keep the sound consistent. If the mic doesn't stay pointed at the subject you will lose the audio. Unidirectional microphone is not good for recording group discussions.

CARDIOID

Cardioid means "heart-shaped" which is the pick-up pattern used by these mics. Sound is often selected from the front but also the sides to a lesser degree.

Uses: Highlighting the microphone's directional sound while leaving some latitude for microphone movement and ambient noise.

The cardioid is an extremely versatile microphone which is ideal for general use. Handheld mics are usually cardioid in nature.

2. BI-DIRECTIONAL

Bidirectional microphone picks up the signal from two sides as the name implies.

Pickup patterns are sensitive to signals emanating from the front and back of the microphone capsule, while rejecting sounds from the microphone capsule's left and right sides.

Uses: There aren't as many situations as you can imagine that require this polar pattern. One possibility would be an interview with two people (with the mic between them) facing one another.

3. OMNI DIRECTIONAL

The simplest mic design will pick up all sound from all directions, regardless of its point of origin, and is thus known as an Omni-directional microphone.

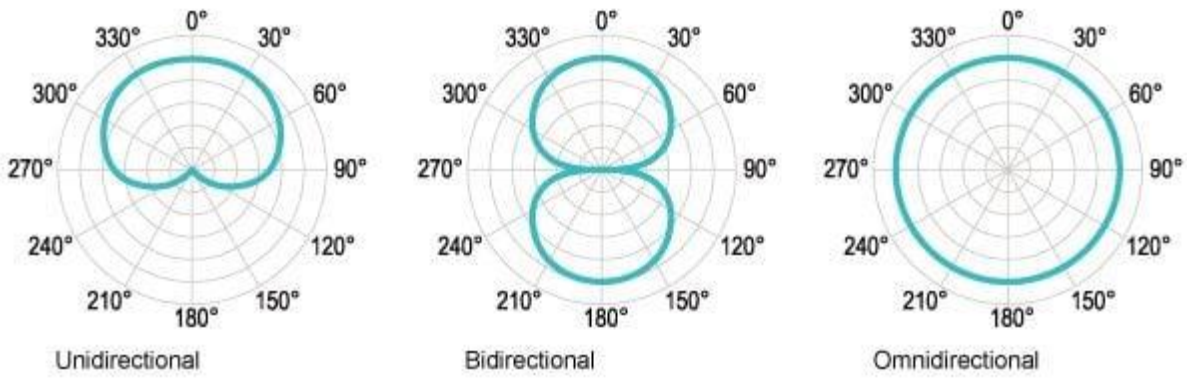
They are very easy to use and generally have good to outstanding frequency response.

USES OF OMNI DIRECTIONAL

Capturing ambient noise; Situations where sound is coming from many directions; Situations where the mic position must remain fixed while the sound source is moving.

Although omni directional mics are very useful in the right situation, picking up sound from every direction is not usually what you need.

Omni sound is very general and unfocused - if you are trying to capture sound from a particular subject or area it is likely to be overwhelmed by other noise.



Types of microphone on the basis of construction design are:

- **Dynamic or Moving Coil Microphone:** This is common broadcast quality microphone which can be used for outdoor broadcasting.
- **Ribbon/Velocity Microphone:** Bi-directional, delicate, should be carried free from jerks. Normally not used for outdoor broadcasting, good for recording of orchestra-soft and high pitch voice should be normal to the face of the microphone.
- **Condenser Microphone:** It has a high background hissing noise. Variable directivity condenser microphones are becoming popular these days.
- **Electret Microphone:** Modified form of condenser microphone. It has less hissing noise and high impedance.

13.2.11 TIPS FOR GOOD SOUND RECORDING

For recording the programmes, you should keepthe following tips in your mind.

1. **Select a good quality microphone:**As for microphones, you typically get what you're paying for. A good mic will give you good quality audio. This is not to say you cannot afford a cheap microphone.

   Your best choice when choosing a microphone is to go for a unidirectional microphone. The sound is recorded from one direction. This is great for recording narration because it only picks up the sound from the narrator, so you won't get a lot of the noise from the environment.

2. **Maintain a consistent atmosphere:**If you have a recording studio which allows you to control all the sound. The more you monitor the recording environment the better you can record audio quality. One key to this is to develop a consistent recording routine. It never fails you're going to have to do retakes at another time.

   By keeping an environment and procedures consistent, you are better able to match the quality of the audio.

   Try using the same room, and keep the same settings on your computer and set up the microphone.

   Use a microphone if you are using a desktop microphone, and measure the recording distance so that you have the same setup the next time you record.

3. **Get rid of any possible ambient noise:**Quite rarely is there a time when there is complete silence. That will be very obvious as you listen to your recording and start picking up all kinds of noise. There are actually some organizations pipe in "white noise" to make it easier to concentrate and less distracted by surrounding conversations.

   In either case, you need to control of the noise either external or internal. Unplug-in machines for office. Turn fans and air conditioners off. Place your microphone away from the device. You may not know it, but your machine does a lot of noise for fans.

13.2.12 RECORDING VARIOUS AUDIO PROGRAMMES

Know the programs you listened to on radio. Try and remember some of these. You may have heard radio station names, from where the Programs are aired. You would many remember VividhBharati, AIR. You may also recall the time of FM Gold or other private commercial station.

Which program you are going to listen to and which are mentioned. Their names areAdvertisements. Ads have historically been made by people who they're called Announcers. They may be called Radio by commercial radio channelsJockeys (RJs) or individuals who anchor. Before you get to know the various radio formats, the ingredients of a radio format must be known.

As you know, most of the talk is written down on the radio. As you already have learned that what is written for radio is heard and called 'spoken word' Contra the 'written word' But the words spoken on the radio are written down, or what Generally referred to as 'scripted.' A Radio format can be divided into three parts are:

(A) Spoken Word or Human Voice
(B) Music
(C) Sound Effects

(A) SPOKEN WORD

1. **Announcement**: These are clear messages specifically written to inform. They can be of different styles. Identification of station / program, for example.

   These state the station you are tuning in, the frequency, the time and the You're listening to a program / song. As already mentioned, you can find it in those announcements

have been casual today's commercial radio channels and look like ordinary conversation. More than one presenter may be present in some programmes, such as magazines.

2. **Radio Talk:** Radio conversation is probably the oldest radio format. There has In India and Britain it was a tradition to invite experts or prominent individuals to have 10 or 15 minutes to talk on any relevant issue.
3. **Radio Interview:**Have you ever interviewed anyone? Perhaps yes. In the Game Press, whether in newspapers, magazines, radio or televisions, journalists are using this Technique of obtaining information by asking questions. There can be different forms of Interviews about length, content and intent of the interviews. First, there are full services for interviews. These are the duration of Can vary in length from 10 minutes to 30 minutes or even 60 minutes depending on the subject matter, and the interviewee. Many of those interviews are Basing on personality. You've already heard of long interviews with well-known Public life, literature, science, sports, movies etc.

   Additionally, interviews are used in various radio programmes Close to documentaries. The interviews here are short, specific questions and not a lot. The purpose of this is to get a very brief answer to the point. Third, there are many news-based interviews or interview programs and programs concerning current affairs. Have you seen any radio interviews? You might have heard live with phone-in-programs becoming popular listener interview. They made those interviews interactive.

   There is another kind of program based on interview. In general, here's just one or two questions are conveyed to ordinary people or knowledgeable people to assess public opinion on a certain current subject. For instance when the general budget or the budget for the railways is presented in parliament, people Radio representatives go out and ask the general public what they think. Yours do not press for names and identities. Such services are called **'vox pop'** that is a Latin term that means people's voice.
4. **Radio Discussion:**If you have a dispute with your father or your relatives Friends, you're not saying, "Let's talk?"Yeah, we're doing it. Through a debate we Is able to find a solution to problems. There are more than 2 or more at any discussion 3 Individuals can be combined and then thoughts can come to some conclusion. Discussions on radio are held while social or Economic issues which are potentially controversial. Generally, those radio discussions are longer-say 15 to 30 minutes. Twofold or three people known for their views, and a well educated senior Participate in person or journalist acting as moderator and discuss a particular Theme for approximately 30 minutes.

5. **Radio Drama:** A radio play or a radio play is like every other play that has been staged inTheatre, or the lobby. The main difference is that when there are actors in a stage play, the stage, sets, curtains, movement assets and live action, a radio playJust 3 elements. They are the effects of human voice, of music and of sound. RadioUses its greatest strength to produce radio plays, of course, and that is the power of fantasy and suggestively. For instance if you want aYou don't have any of the physical scene in a radio play of a North Indian marriageArrangements have been made. What you need to do is use a sparkling tune on theShehnai which creates the atmosphere.
6. **Documentaries / Features on radio:** If you see a movie in a movie hall, it's generally a story-based feature film, and not real. But it also contains documentaries Films focused on real-life topics. You see a lot of services Educational and public service documentaries are broadcast on television. Present on radio has the format. In contrast to documentary films, Radio documentaries only have Sound-the voice, music and sound effects of humans. So, a documentary on radio Is a program based on real sounds and real people and their perspectives Experiments. Radio documentaries are based on presented facts in an attractive manner Way, or dramatic. Radio documentaries form the creative format of the radio itself.
7. **NEWS:** News is the most commonly spoken word format on the radio. Every hour newsletters and news programs are broadcast by Radio channels. In India, the broadcast of news is allowed only to All India Radio. Duration of news bulletins ranges between 5 minutes and 30 minutes. The more reporting the newsletters include interviews, content, expert reviews and feedback.

(B) MUSIC

The first thing that comes to mind when we talk radio is music. So the main stay in the radio is music. Without music, there would be no radio. Music is all about Usage on radio in many different forms. There are music and music programmes used in various programmes, too. These include signature tunes and used music as effects and features in radio plays.

India has a fantastic musical heritage, and that is reflected by radio in India. Let's get to understand the different music types. When we say radio, the first thing that comes to our mind is music. So music is the main stay in radio. There is no radio without music. Music is used in different ways on radio. There are programmes of music and music is also used in different programmes. These include Classical Music, There are 3 types of classical music in India. They are:- Hindustani classical, Carnatic classical, Western classical.

You can know a wide variety of folk and devotional music in your field over the country. Which are aired on radio? But which type of music is the most popular? You'd most likely say "movie Art.' Although film songs are available in different languages, the one with national language isThe Hindi film songs are appealing and popular. That it is public on most radio stations Service or commercial, Songs from Hindi movies are heard everywhere. Light western and pop music are also popular with some listener groups and a large section of youth listen to western pop music.

(C) SOUND EFFECT

A sound effect is captured and introduced in order to establish a particular storytelling or artistic point without the use of dialog or music. The term also refers to the method applied to a recording, without the recording itself being actually related to a particular ambience.

Examples:

Sound effects for crowds.

The sound effects of war.

Game Sound Effects Demonstrate.

Train Effects Sound.

Doorbell Effect Vibration.

13.3CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

Q1. Define Visual Communication.

……

……

……

…

Q2. Discuss the various types of microphone?

……

……

……

…

Q3. Which skills required for Radio Presenter, Anchor or Radio Jockey.

……
……
……
…

13.4 SUMMARY

- Audiovisual (AV) is an electronic media with both a sound and a visual component, such as slide-tape presentations, films, television programs, corporate conferencing, church services, and live entertainment.
- As in the form of sound and visual component, audio-visual communication passes information. Some examples for audio visual communication are films, television programs, video chat etc. This type of communication can give greater accuracy in communication between the individuals who make the communication.

13.5 KEYWORDS

Audio Visual: Audiovisual is electronic media possessing both a sound and a visual component, such as slide-tape presentations, films, television programs, corporate conferencing, church services and live theater productions.

Post Production: Post-production is part of the process of filmmaking, video production, and photography. Post-production includes all stages of production occurring after shooting or recording individual program segments.

Omni Directional:*Omnidirectional microphones* are microphones that pick up sound with equal gain from all sides or directions of the microphone.

Proximity:Nearness in space, time, or relationship.

Acoustics: The properties or qualities of a room or building that determine how sound is transmitted in it.

13.6 SELF-ASSESSMENT TEST

1. Suggest any 4 good tips for Audio recording.
2. Discuss the various types of Microphone.
3. How Noise matters in sound recording?
4. Explain different stages of Audio-Visual Production?
5. What is Sound?

6. Discuss the term “Studio”?
7. Which Music programme reflect the soul of Indian music?
8. What is the difference between a documentary and feature?
9. Discuss the various types of microphone?
10. Describe the Components of Audio programme production.
11. Explain different Stages of Audio-Visual Production?
12. Discuss the Visual Communication.

13.7 ANSWERS TO CHECK YOUR PROGRESS

Ans 1. The transmission of information and ideas using symbols and images is visual communication. It is a broad spectrum that includes signs, graphic designs, illustration, advertising, animation, color, movies, typography, and countless other examples. Semiotics is the study of symbols and visual communication.

Ans 2. On the basis of pick-up patterns or directionality, there are three types of microphones. (1) Unidirectional Microphone (2) Bi-Directional Microphone (3) Omni Directional Microphone and on the basis of construction design, there are (1) Dynamic or Moving Coil Microphone (2) Ribbon/Velocity Microphone (3) Condenser Microphone (4) Electret Microphone.

Ans 3. A successful radio announcer should has Soothing and impact voice, Voice modulation, Clear diction, Command over the language and vocabulary, Control over voice pitch, Good sense of humor, Creativity, Spontaneity, Knowledge of music and current affairs, Mimicry, Well-spoken in local dialects, Diplomatic, Punctual, Friendly and approachable attitude, Witty, Express himself/herself confidently and Communicate ideas clearly, using oral organs.

13.8 REFERENCES/SUGGESTED READINGS

1. Learning Audio and Video Production Student Edition: Publisher: Pearson,2016
2. Radio Production by Robert McLeish ,Focal Press
3. Video Production Paperback by VasukiBelavadi ,Oxford University Press

SUBJECT: GRAPHICS AND MEDIA PRODUCTION	
COURSE CODE: MSM-503	AUTHOR: DR. UMESH C. PATHAK
LESSON NO.: 14	VETTER: PROF. HARISH ARYA
VIDEO CAMERA	

STRUCTURE

14.0 LEARNING OBJECTIVES

After reading this lesson you will be able to-

- **Determine the basics of Video Camera.**
- **Acquaint the Video Camera and its Parts.**
- **Know how Video Camera functioning.**
- **Define different types of Shots in Video Shooting.**
- **Understand the three point lighting.**

14.1 INTRODUCTION

A video camera is a camera used to acquire electronic images, Developed initially by the television sector but now common in others Applications and. Video cameras are primarily used in two modes. The first, characteristic of very early TV, is what might be considered a live

broadcast, where the camera streams images directly to a computer for immediate use. Observation; such use characteristic of defense, military or tactical, and industrial operations, in addition to live television production, where surreptitious or remote viewing is required.

The second is to have the images captured for archiving or further processing on a storage device; videotape has been the main medium used for this purpose for many years, but the use is made of optical disk drive, hard disk, and flash memory. Recorded video is used not only in the production of television and film, but also in the monitoring and monitoring tasks where an unattended recording of a situation is needed for later review.

It is also fascinating to see the rise of flash-based pocket video camera Memory; digital cameras may become iPods.

Modern video cameras have numerous designs and uses which do not all resemble early TV cameras.

14.2 VIDEO CAMERA

Video cameras use a silicon piece that is transformed into a diode and charged to what is called negative bias. It frees an electron that gets stuck in the diode when light reaches the diode. We can then measure the trapped electrons per pixel to determine the image.

The electronic or VIDEO CAMERA is identical to any other camera in that light reflected from an image is directed within the camera by a lens onto a plane. The video camera includes a CAMERA TUBE that processes the image, unlike the film camera. Video cameras types and sizes vary greatly, since they need to be designed for a variety of different applications. The use of the video camera determines how sophisticated the design, the cost and the camera type are.

14.2.1 PARTS OF VIDEO CAMERA

Camcorders are made up of three components: lens, imager and recorder. The lens gathers light and concentrates on the imager. Incident light is converted into an electrical signal by the imager (usually a CCD or CMOS sensor).

Video cameras can vary from computer Web cams to small handheld camcorders to large cameras used in movies and TV, but they all share a number of important parts. Just like the human body, a car or any other complex machine, each of these parts is needed for the camera to function properly.

LENS

On a video camera the lens performs the same purpose as the lens of a still camera. It pulls in light and catches the image the camera points at. This telescopic piece can have several lenses inside. By turning them, a number of dials on the tube will shift the lens positions and this will

control how the lenses focus the light they receive to clarify the image.

VIEWFINDER

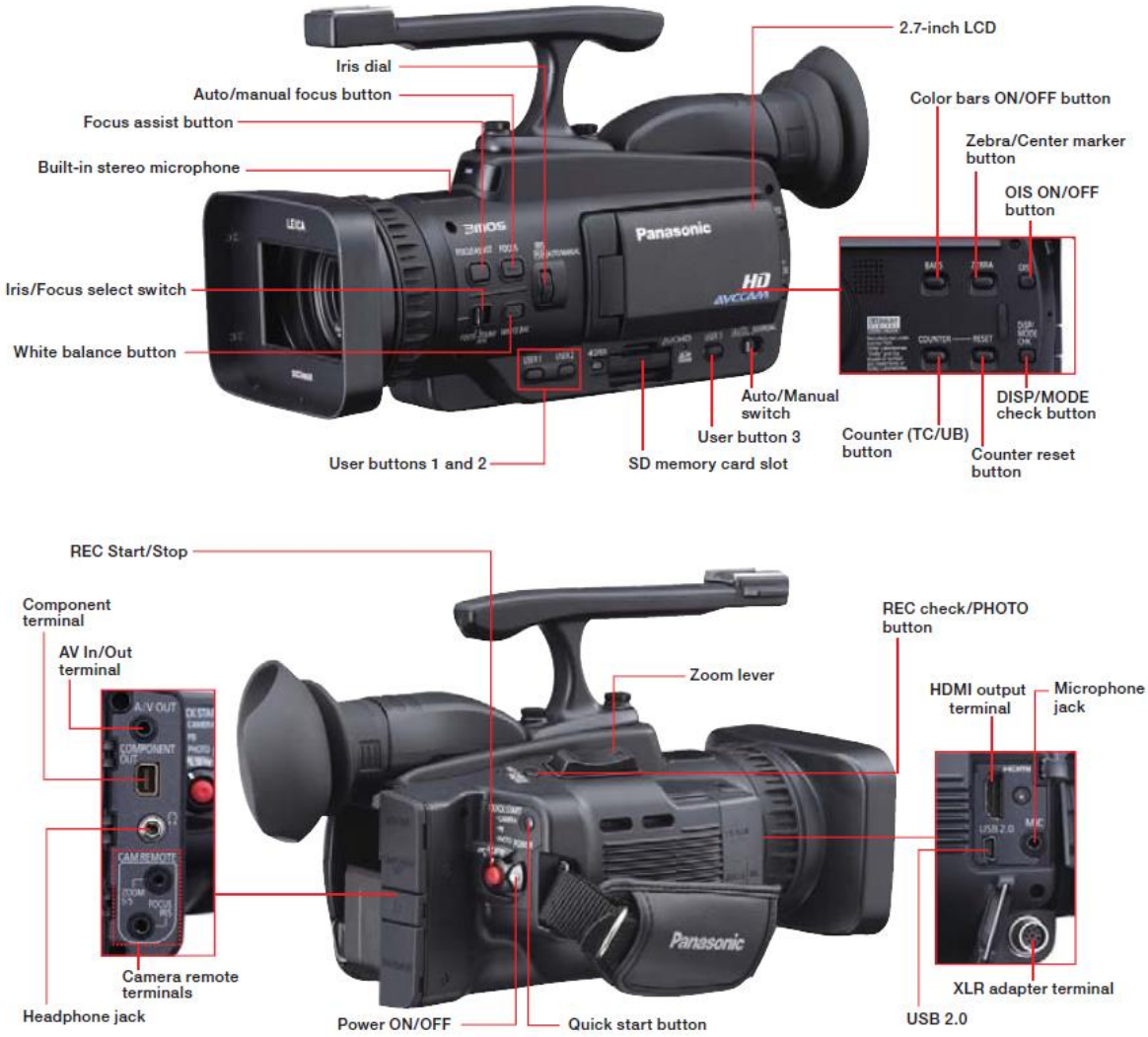
The viewfinder is connected directly to the lens, and is intended to give the user access to the image. It can be a large eye-sized window, or a tiny pixel panel that folds when not in use into the camera; several models have both variants. Also viewfinders double as video screens for the recorded image to be played back.

MICROPHONE

For the camera, the lens only picks up the visual images, meaning that this alone would create a silent image. Therefore video cameras also include microphones recording sound in the area. Typically the microphone is mounted next to the lens and pointed in the same direction, so that the audio and video are in close sync.

RECORDER

The recorder collects and records the images from the microphone obtained by the lens and the sound into memory. This will engrave the image on a magnetic tape inside a cartridge on older analog cameras now in digital memory. Most cameras would take complete VCR tapes, but others would need thumbnail versions of such cassettes or other formats such as Hi8. Digital cameras do away with cassettes required. Instead, the camera records the image as a video file to a computer. This file is all in AVI format.



Source:

https://helpdesk.malone.edu/helpdesk/WebObjects/Helpdesk.woa/wa/FaqActions/view?faqId=214

CONTROLS

The main controls of the camera include the Power switch and the button Record. It will also include the Play, Stop, Rewind, Fast Forward and Pause buttons. The controls also provide escape ports to connect the playback camera. All cameras should include the basic red / white / yellow RCA cables for connecting to any playback machine, but they may also include USB or FireWire controls for connecting to a PC.

LENS AND IRIS

A video camera's lens gathers and concentrates light falling from objects; Men, spaces, etc. onto the camera image processing chip. Between the lens and the image processing chip is the iris that regulates the amount of light on the chip. In its function a video camera's lens and iris can be compared with the human Head-The eye image-processing unit. The iris is also often

referred to as a glimpse.

FOCUS

Good digital video cameras allow you to manually change focus with a focus ring. It helps you to focus only on very much, depending on the aperture .A few objects close together, or a wide array of objects far apart.

SHUTTER

The shutter is a device that opens and closes rapidly in front of the camera's lens. By increasing the speed of the shutter, faster movements are less blurry when recorded. However these faster shutter speeds also need more light.

GAIN

Adjust the gain to make the camera more sensible to incoming light. You use it when the scene has insufficient light (at night) It's better to light a scene because what you're doing is amplifying the signal, which also increases the amount of "noise" or grain you want to avoid in the picture.

SENSOR

The camera's sensor transforms the light that comes in through the opening of the lens into a tiny electrical charge just the same as it does in a solar panel. ... There are currently two sensor types, CCD (Charge Coupled Device), and CMOS (Complementary Metal Oxide Semiconductor).

BATTERY

Battery power is critical to camera usage. Each video camera comes with a rechargeable battery. Many batteries are based on lithium-ion, and each one is made and built to operate only with its camera model. It will normally take 8-12 hours to charge a full battery, which means an overnight charge would suffice.

14.2.2 TYPES OF VIDEO CAMERAS

Modern video cameras have various styles and applications, which are not necessarily identical to early TV cameras.

PROFESSIONAL VIDEO CAMERAS

Such as TV cameras and occasionally film production, may be studio or mobile. In general, such cameras offer the camera operator extremely fine-grained manual control, often to the exclusion of automated operation.

CLOSED-CIRCUIT TV CAMERAS

This camera typically used for purposes of protection, surveillance, reporting and/or

monitoring. Such cameras are designed to be small, easily hidden, and capable of unattended operation; those used in industrial or scientific settings are often intended for use in environments that are normally inaccessible or uncomfortable to humans, and are therefore hardened for such hostile environments such as radiation, high heat or toxic chemical exposure). Webcams can be thought of as a form of CCTV camera.

DSLR VIDEO CAMERAS

One of the most common types of video cameras available out there is DSLR Video Camera. The best part of them is that along with amazing videos they can select beautiful images. And there are nearly every YouTuber to film their videos using DSLR's.

DSLR stands for Digital Single Lens Reflex Camera. There is a mirror inside the camera's body which reflects the light coming from the lens. Also, when you touch the shutter, an image sensor flips up the image and the light comes out of the lens, and that's how a photograph is made. The image sensor also begins capturing it for video, instead of clicking on a shot.

The camera also supports different lens sizes. As a result, you get different types of videos or photos to press or fire. Overall, DSLR cameras are the most popular cameras, and they are also fairly affordable.

MIRRORLESS VIDEO CAMERA

Mirrorless Video Camera varies greatly from DSLR cameras. They are very close in other respects, however. They do look the same. And, as the camera's name indicates, it is mirrorless. Therefore, in the picture there is no mirror we can see in a DSLR. The image sensor is still exposed to the light in a mirrorless camera, and provides you with a visual preview of your image on the LCS screen.

Both DSLR cameras and Mirrorless cameras are very powerful. Nevertheless, the camera manufacturers can easily compact the size of the camera by removing the mirror. As a result, the mirrorless cameras are significantly smaller. And to casual photographers, they are a pretty good option. There are also quite a lot of people who like using Mirrorless cameras.

POINT-AND-SHOOT VIDEO CAMERA

Point-and - shoot video cameras is among the most popular kind of camera we've all seen. They are limited in size and don't give us many apps. As you can't change lenses. They also come with autofocus, and an integrated flash feature.

SPORTS AND ACTION VIDEO CAMERAS

Compared with any other camera out there, the action cameras are far better. The thing about them is they come with pretty many accessories. As a result, you can attach your helmet, bike, or anywhere with an action camera. These are compact in scale and constructed of durable materials.

They come with a single lens, capable of shooting from a wide-angle viewpoint in high definition. Most of the cameras will film in 4 K too. This type of camera is mostly used by travelers or at sporting events when you need to capture shots from a bike, car or whatever.

DIGITAL CAMCORDER

Digital camcorders are only made for video shooting. We can film videos in formats such as Digital8, MiniDV, DVD, a hard drive or solid-state flash memory. Digital camcorders will fire still photos in some models, too. The quality of the picture may not be as good as the digital camera though. In today's time, even digital camcorders are fairly old.

Typically, a digital camcorder comes with a lens, image sensor, and media storage. Apart from that, there are a whole variety of features you can see in such cameras.

ENG CAMERA

Although by nature video cameras from ENG (Electronic News Gathering) were originally designed for use by news camera operators, these have become the predominant type of professional video camera for most uses, from shooting dramas to documentaries, from music videos to corporate training.

ENG cameras are bigger and heavier and are typically protected by a shoulder stock on the shoulder of the cameraman, taking the weight from the hand that would be freed to operate the zoom function of the lens. The cameras' weight also aids in dampening small movements.

- Instead of one, 3 CCDs are used for each primary colour.
- Their lenses are interchangeable.
- All settings, white balance, focus and iris can be changed manually, and automatics can be fully deactivated.
- Lens is manually and directly focused, with no intermediate servo controls. However in a studio configuration the lens zoom and focus can be operated with remote controls.

14.2.3 WHITE BALANCE

White balance (WB) is the process of removing unrealistic color casts, so that in your photo objects that appear white in person are turned white. Proper white balance camera has to take into account a light source's "color temperature" which refers to the relative warmth or coolness of white light.

White Balancing in video camera is a feature that gives the camera a "real white" reference — it tells the camera what the white color looks like, so the camera can record it properly.

White balance is the process that the camera uses to remove color casts produced by these different color temperatures and helps your camera emulate what our eyes **do** naturally when dealing with **white**. **Auto White Balance** sometimes gives very close results to what you see with your eyes.

White balance is a setting on your camera which is used to monitor how different types of light capture colors. Temperatures range from cool (blue color) to warm (orange color). Using the right white balance setting will remove unnecessary casts of color that can ruin your image and make it look unnatural.

These would be the white balance settings which you can choose from in traditional digital cameras: Auto White Balance: Better if you don't know what you're doing. This functions well

in the heat but is unacceptable for other cases. Daylight: The auto white balance mode can be perfect but not flawless in daylight.

14.2.4 THREE-POINT LIGHTING: KFB (KEY LIGHT, FILL LIGHT & BACK LIGHT)

A three-point lighting technique is one of the oldest lighting techniques used in shooting video. This plays a very important roleto shoot a remarkable and dynamic image of your subject. It can shoot your image with greater dimensions and giving you more control overshadows. It works great for creating a studio type of light and is most preferred for many 3D scenes.

It essentially includes three lights - Key Light, Fill Light and Back Light. By using these lights, you can have complete control over how the subject is published.

1. A key-light that produces the most amount of light and shines on your subject.
2. A fill-light that ‘fills’ in any shadows left by the key-light.
3. A back light that beautifies the image with a soft glow on the back of the subject’s head/shoulders.

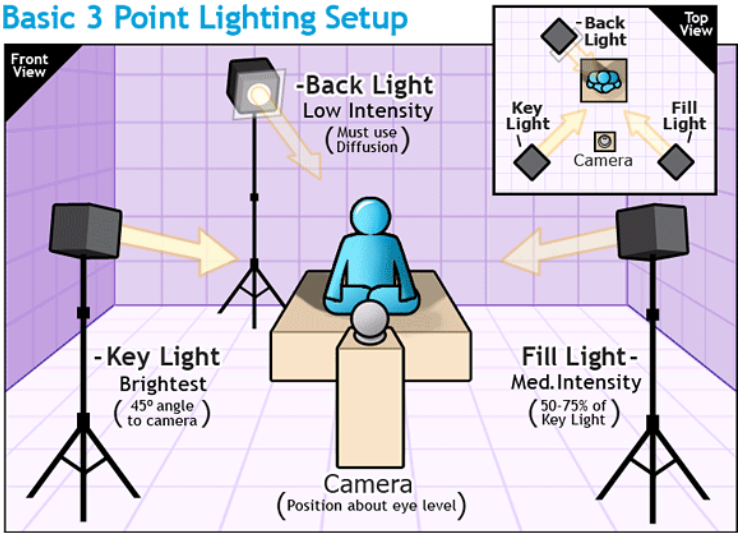
It is a perfect setup for any form of interview or video of someone speaking in front of a camera. This system can also be used for narrative videos as well. Now I'll go through each of the lights and show you the correct positioning.

Your brightest light is the **Key Light**. No regular wattage is common for a key light. Depending on the situation it can range from 150 watts up to 10k watts. The main light to the side of the camera should be between 15 and 45 degrees.

The **Fill Light** is used to 'fill' out the shadows that key light creates. The light is less effective than the key light. Again, there are no rules on what watt the fill light should be used to. But bear in mind that it should be smaller than your key. I use a 250 watt fill light with a 500 watt keylight. Occasionally even if it's too bright I diffuse this light with filters. You'll only have to test and see until you've got the correct brightness.

This light is placed on the opposite side of the camera as the key light and shines on the subject at a similar angle. Because the key light is placed at an angle, you might get shadows on one side of the face or body.

The aim is not to cancel the shadows created by the key light, but simply to reduce them so that you have a softer transition of light from one side of the face to the other.



Source: https://www.vidsaga.com/three-point-lighting-in-videos/

Back Light can create a magical impact on visual. This will increase the accuracy of your image by tenfold dramatically. Place the back light as near as possible to directly behind the subject. Of course you need to be mindful of what your camera is actually seeing. If necessary, you can hang the back light from the subject's back or set up some kind of light stand so that it hands directly above. Or just put it out of the camera's range (both sides are perfect depending on the look that you want to have). This light's wattage would be comparable or even less effective to that of the fill lamp.

14.2.5 TYPES OF SHOTS

A shot is a fire a gun act. A shot is an act of kicking, hitting, or throwing the ball in sports such as football, golf, or tennis, particularly in an attempt to score one point. In Camera the act of capturing a particular moment is a shot. A scene may have several shots.

As the basic unit of any video, *shots* are the building blocks you'll need to create your project. And since it would be pretty boring for your viewers to watch an entire video shot from the same angle, there are many different varieties to choose from. The simplest shots are referred to as wide, medium, and close-up.

WIDE SHOTS

In a wide shot, the entire subject is visible from top to bottom (from head to toe if your subject is a person), and the background is visible as well. Extremely wide shots often introduce the setting of a video or scene, so they're usually called "establishing shots."

Source: https://toddtevlin.com/shot-composition-in-comics-wide-medium-closeups/

MEDIUM SHOT

A medium shot moves on the subject a little closer, showing people up from the waist and filling the screen with only a part of any non-human subject. This is the shot you'll see the most when watching a movie.

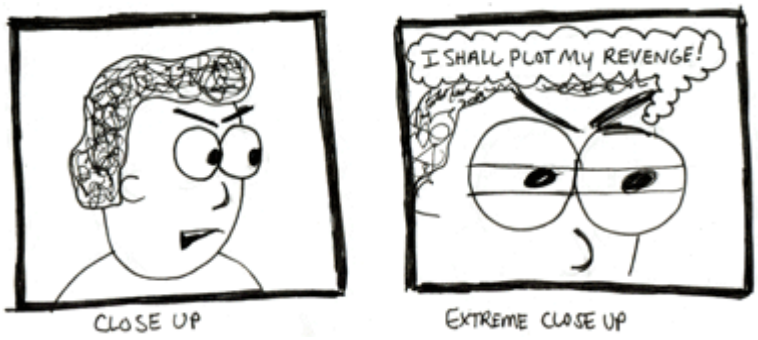
Source: https://toddtevlin.com/shot-composition-in-comics-wide-medium-closeups/

CLOSE-UP SHOTS

And close-up shots are self-explanatory — they fill the entire screen with the subject's up-close-and-personal view. Occasionally, they are called close shots.

Certain differences in big, medium, and close-up shots, such as medium-wide shots and extreme close-ups, are evident. Play around with all the basic types of shots, but note by picking up your camera and physically moving around, you'll get the best results. When you

film your small and close-up shots from different angles and perspectives than your wide shots, your video will become visually much more compelling.



Source: https://toddtevlin.com/shot-composition-in-comics-wide-medium-closeups/

Beside these there are various more shots used as per required; some of them are as follows:

LONG SHOT: It shows the subject from top to bottom; this would be head to toes for a human, but not necessarily to fill the picture. The character becomes more of a focus than an Extreme Long Shot but the scenery still dominates the shot. This shot also positions the scene and the location in it that our hero has. It may also act as an Establishing Shot, rather than an Extreme Long Shot.

FULL SHOT: Frames character from head to toes, with the subject filling out the frame roughly. The accent tends to be more on action and movement than the emotional state of a character.

MEDIUM LONG SHOT: It Intermediate between Full Shot and Medium Shot. It Show subject from the knees up.

EXTREME CLOSE UP: It emphasizes a small area or detail of the subject, such as the eye(s) or mouth. An Extreme Close Up of just the eyes is sometimes called an Italian Shot, getting its name from Sergio Leone's Italian-Western films that popularized it.

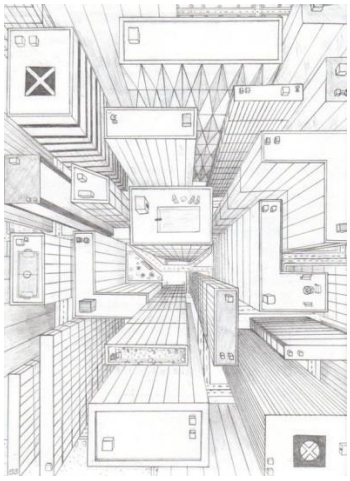
LOW ANGLE: In Low Angle the subject is photographed from below eye level. This can have the effect of making the subject look powerful, heroic, or dangerous.

OVER-THE-SHOULDER: This is a common shot where one subject is taken from behind another's head, framing the subject from a medium to close-up anywhere. The hand, neck and/or back of the subject's head that faces away from the camera remains visible, making the

shot useful to display reactions during conversations. This appears to emphasize more the relation between two speakers than the distance or alienation resulting from single shots.

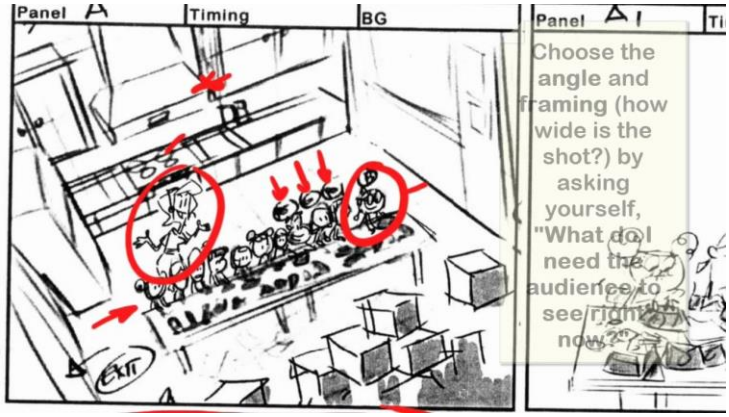
Source: https://www.enchanted.media/beginners-guide-to-camera-shots-and-angles/

BIRD'S-EYE VIEW(Top Shot): A high angle shot which is taken from a distance and directly overhead. The shot gives the audience a broader view and is useful for showing direction and moving the subject, highlighting special relationships, or revealing elements to the audience outside the boundaries of awareness of the character. Frequently the shot is taken from a crane or helicopter.



Source: https://in.pinterest.com/pin/610097699291439 10/

ESTABLISHING SHOT: Usually the first shot of a scene; this is used for location and atmosphere determination. It can also be used to set mood and provide visual hints to the audience about time (night / day, year) and general situation. Establishing shots are typically extreme long shots or long shots because they need to include a lot of detail.



Source: https://in.pinterest.com/pin/432416001695640722/

POINT OF VIEW SHOT (POV): Shot designed to imitate what a certain character is seeing in a scene. It actually takes the viewer into the character's mind, making them feel their emotional state. Common examples are waking up characters, drifting into the unconscious, or looking through a scope or binoculars.

Source: **http://tashikabaileya2mediacw.weebly.com/moodboards-and-storyboard.html**

14.2.5 HANDLING VIDEO CAMERA

There are some rules which one should follow while handling the video camera

Steady: Keep the camera steady. If possible, use a tripod. Don't constantly zoom in & out or pan right to left. In general, you want to record at least: 10 of each shot. Let the action in the frame speak for itself. You will thank yourself once you're back in the editing room.

Background: What's behind the scenes? – When filming an interview or a video, be sure to note what's behind the scenes. You can either move the camera to get the best view, shift the subject or create a new backdrop. Ask yourself, is the context visually "supporting" this story? "Is this a suitable setting for the discussions?

Wide, Medium, Close-up Shots: Wide, Medium, Close-up-Make sure you have different angles for and scene or occurrence that you're filming and you'll have options in the editing process. For instance, if you're videotaping a demonstration, get the widest possible view (maybe on top of a building looking down on the crowd), then get close-ups of the faces in the crowd and then some medium shots of people from the ground level.

Microphone is important: Where is your Microphone? – Most amateur video or budget filmmakers don't have the luxury of providing audio equipment for them to carry a boom mic. You frequently rely on the microphone on top of your camera for sound in budget filmmaking. When that's the case, you'll just need to be careful of where the mic is relative to the sound that you're trying to record. If someone is talking, you'll need to keep the camera really close to that person, otherwise the viewer will be irritated to strain on hearing what they're saying. The truth is your shot is always determined by having good sound. Study the basics in audio along with tips on videography.

Rule of Thirds: It is one of the most basic and a well-known rule, the rule of thirds is the cardinal rule for stills and video. Use the rule of thirds and the negative space to help you place your subject in the frame.

180 Degree Rule: The 180 degree rule helps to create continuity between videos, making this one of the video composition's most important rules. The camera should only shoot from one side of the line when filming opposite angles, and never cross the 180 degree line to film the other angle. Otherwise, the characters will look the wrong way and you will be breaking the shot’s continuity.

Headroom: This is the space between the actor’s head and the top of the frame. This rule is especially important in documentary or corporate style videos. With cinematic videos, you have more wiggle room to be creative.

Creating Depth: No-one wants a boring, flat frame. Development of depth is often critical by placing different elements in the foreground and background.

Know When to Break Regulations: Knowing how and when to break a rule is not only relevant, you should know why you break it, and how it will improve the scene.

Lighting: As with portraits, the same rules apply to videography. Always make sure your subjects are very well-illuminated (but not "over-lit" please). Don't put the topic of an interview

with their back to the sun as an example. Or don't place them under a shade tree with a bright background scene.

Anticipate behavior: It is one concept that is almost difficult to teach. It's an instinctive ability that evolves the more you fire. If you miss a couple of "money shots" you'll have to pay attention. A basic example of this is a game of baseball. If you want to capture a player that hits the ball, you'll have to anticipate that moment and start recording a few seconds or minutes.

14.3CHECK YOUR PROGRESS

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this lesson.

CHOOSE THE RIGHT OPTION.

1. What is a scriptwriter job responsibility?
   (a) Shoot the footage
   (b) The main actor
   (c) Compose the words that will be said on camera
   (d) None of the above
2. What is headroom?
   (a) Top of your feet
   (b) Space between the top of a subjects head and a monitor upper screen
   (c) All around the camera
   (d) None of the above
3. What shot is a distance away from a subject?
   (a) Close up
   (b) Medium shot
   (c) Long shot
   (d) None of the above
4. What is a point of view shot?
   (a) Looking into the eyes on another subject
   (b) The camera shows what a character is looking at
   (c) A shot that shows a great deal of the area where the scene is taking place
   (d) None of the above
5. What type of shot establishes a scene setting?
   (a) Close up shot

(b) Medium shot

(c) Establish shot

(d) None of the above

6. What is a medium shot?

(a) The same as a long shot

(b) A shot that shows more detail than a long shot, but not as much of a close-up

(c) The same as a close up shot

(d) None of the above

7. What is framing?

(a) Establish Shot Sets up, or "establishes", a scene setting

(b) A detail shot

(c) The process of creating a composition

(d) None of the above

14.4 SUMMARY

- A video camera is a camera used to acquire electronic images, Developed initially by the television sector but now common in others Applications and. Video cameras are primarily used in two modes. The first, characteristic of very early TV, is what might be considered a live broadcast, where the camera streams images directly to a computer for immediate use.

- Video cameras can vary from computer Web cams to small handheld camcorders to large cameras used in movies and TV, but they all share a number of important parts. Just like the human body, a car or any other complex machine, each of these parts is needed for the camera to function properly. Sensor is a very important aspect of Camera. The camera's sensor transforms the light that comes in through the opening of the lens into a tiny electrical charge just the same as it does in a solar panel. There are currently two sensor types, CCD (Charge Coupled Device), and CMOS (Complementary Metal Oxide Semiconductor).

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- A three-point lighting technique is one of the oldest lighting techniques used in shooting video. This plays a very important role to shoot a remarkable and dynamic image of your subject. It can shoot your image with greater dimensions and giving you more control overshadows. It works great for creating a studio type of light and is most preferred for many 3D scenes.
- It essentially includes three lights - Key Light, Fill Light and Back Light. By using these lights, you can have complete control over how the subject is published.
- Handling camera is an art with technical skills. One should take care of visual l, lighting, background of the scene and sound input while shooting with video camera. Basic knowledge of script is also required it helps to establishing the shot as per story.

14.5 KEYWORDS

Video Camera:a camera for recording images on videotape or for transmitting them to a monitor screen.

White Balance:white balance in photography means adjusting colors so that the image looks more natural.

Camera Lights: Photographic lighting is the illumination of scenes to be photographed. A photograph simply records patterns of light, color, and shade; lighting is all-important in controlling the image. Lighting and exposure are used to create effects such as low-key and high-key.

Camera Shots:A shot is a continuous view filmed by one camera without interruption. A scene is a place or setting where the action takes place. A scene may consist of one shot or series of shots depicting a continuous event.

Camera Angle: The camera angle marks the specific location at which the movie camera or video camera is placed to take a shot.

14.6 SELF-ASSESSMENT TEST

13. Explain any 5 types of shots?
14. Discuss the CCD & CMOS
15. How light is important in videography?
16. **Explain different types of video camera?**
17. **What is gain in video camera?**
18. **Discuss the various parts of video Camera?**

14.7 ANSWERS TO CHECK YOUR PROGRESS

1. (c) Compose the words that will be said on camera
2. (b) Space between the top of a subjects head and a monitor upper screen
3. (c) Long shot
4. (b) The camera shows what a character is looking at
5. (c) Establish shot
6. (b) A shot that shows more detail than a long shot, but not as much of a close-up
7. (c) The process of creating a composition

14.8 REFERENCES/SUGGESTED READINGS

1. Langford's Basic Photography, Focal Press New York & London
2. http://www.betterphotography.in/
3. Video Production Paperback by VasukiBelavadi,Oxford University Press
4. Video Production by GeraldMillerson,Focal Press
5. https://helpdesk.malone.edu/helpdesk/WebObjects/Helpdesk.woa/wa/FaqActions/view?faqId=214
6. https://www.vidsaga.com/three-point-lighting-in-videos/
7. https://toddtevlin.com/shot-composition-in-comics-wide-medium-closeups/
8. https://www.enchanted.media/beginners-guide-to-camera-shots-and-angles/
9. https://in.pinterest.com/pin/61009769929143910/
10. : https://in.pinterest.com/pin/432416001695640722/
11. http://tashikabaileya2mediacw.weebly.com/moodboards-and-storyboard.html