MASTER OF COMPUTER APPLICATION

(5 Years Integrated)

ASSIGNMENTS

MCA 4th & 5th Year

(SESSON 2022-2023)

Directorate of Distance Education
Guru Jambheshwar University of Science & Technology
Hisar - 125001

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR

DIRECTORATE OF DISTANCE EDUCATION

Programme: MCA (3-year) **Course: Computer Graphics**
Year: 4t **Total Marks=30**
Code: MS-401

Important Instructions

I. Attempt all questions from each assignment given below.
II. Each assignment carries 15 marks.
III. All questions are to be attempted in legible handwriting on plane white A-4 size paper.

ASSIGNMENT-I

Q1. List three graphic hard copy devices for each one briefly explain? 4

i. How it works.

ii. Its advantages and limitations.

Q2. Explain Bresenhan's line algorithm and derivation of algorithm. 6

Q3. Explain mid-point algorithm? Write algorithm in your own words. 5

ASSIGNMENT-II

Q1. Discuss about geometric transformation. Why we use inverse geometric transformation? 6

Q2. Why The Cohen-Sutherland Line Clipping algorithm is used? And explain it. 5

Q3 Explain projection & their types with example. 4

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DIRECTORATE OF DISTANCE EDUCATION

Programme: MCA 5 year int. Course **Course: Artificial Intelligence**
Year: 4th
Code: MCA-402 **Total Marks=30**

Important Instructions

I. **Attempt all questions from each assignment given below.**
II. **Each assignment carries 15 marks.**
III. **All questions are to be attempted in legible handwriting on plane white A-4 size paper.**

ASSIGNMENT-I

Q1.Transform the following into Disjunctive Normal Form (DNF): (P--> (~ (Q--->R))) (3)

Q2.Describe following terms:

a) Genetic algorithm

b) Fuzzy system

c) Neural Networks (3*3=9)

Q3. How is inferencing used in deriving conclusions from the facts? Differentiate between forward chaining and backward chaining. On what factors does the decision to choose forward or backward chaining depend? (3)

ASSIGNMENT-II

Q1. Explain any two of the following logic concepts, using suitable examples:

a) Modus ponens

b) Valid statement

c) Unification principle in proposition logic (3*3=9)

Q2. What do you mean by conceptual graphs? Represent the following sentence as a conceptual graph "cow has four legs and eats grass". (3)

Q3. Explain informed and uninformed search? What is hill climbing search? What are problems faced by hill climbing? (3)

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR

DIRECTORATE OF DISTANCE EDUCATION

Programme: MCA **Course: Analysis & Design of Computer Algorithm**
Code: MS-403
Year: 4th **Total Marks=30**

Important Instructions

i. **Attempt all questions from each assignment given below.**
ii. **Each assignment carries 15 marks.**
iii. **All questions are to be attempted in legible handwriting on plane white A-4 size paper.**

Assignment-I

1. Write a binary search algorithm and its application in computer?
2. Explain Knapsack problem in detail with a suitable example?
3. Discuss 8 queen problems with proper steps?

Assignment-II

1. Define dynamics programming? Explain with the example of TSP?
2. Explain the NP Hard and NP complete problems?
3. Differentiate between greedy and dynamic techniques?

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DIRECTORATE OF DISTANCE EDUCATION

Programme: MCA **Course: Operating System -II**
Year: 4th, Code: MCA-404 **Total Marks=30**

Important Instructions

I. **Attempt all questions from each assignment given below.**
II. **Each assignment carries 15 marks.**
III. **All questions are to be attempted in legible handwriting on plane white A-4 size paper.**

ASSIGNMENT-I

Q1.Explain CPU scheduling? Describe the difference between preemptive and non preemptive scheduling algorithms.

Q2. Differentiate between UNIX and Windows based operating systems.

Q3. What is the need of Page replacement? Consider the following reference string-7, 0, 1, 2,0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1 Find the number of Page Faults with FIFO, Optimal Page replacement and LRU with four free frames which are empty initially. Which algorithm gives the minimum number of page faults?

ASSIGNMENT-II

Q1. Explain Semaphore? How does it help in avoiding the race condition?

Q2. Define the term deadlock. Explain various necessary conditions for a deadlock to occur. Explain in brief about deadlock prevention?

Q3. Explain any two Page Replacement algorithms with a suitable example.

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Programme: MCA -5 Year **Course: Computer Networks II**
Year: 4th, Code: MCA-405

Total Marks=30

Important Instructions:

i. **Attempt all questions from each assignment given below.**
ii. **Each assignment carries 15 marks.**
iii. **All questions are to be attempted in legible handwriting on plane white A-4 size paper.**

Assingment-1

Q-1: How IP addresses are classified? Explain different classes of IP addresses.

(5 marks)

Q-2: Define Streaming? How audio and video are streamed on the web?

(4 marks)

Q-3: Write a short note on following terms:

- HTTP
- FTP
- Telnet

(6marks)

Assingment –11

Q-1: Explain the differences between circuit switching and packet switching network?

(4 marks)

Q-2: Describe the format of TCP segments?

(5 marks)

Q-3: Differentiate between frame format of IPV4 and IPV6?

(6 marks)

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DIRECTORATE OF DISTANCE EDUCATION

Programme: MCA -5 Year **Course: MIS**
Year: 4th, Code: MCA-406

Total Marks=15

Important Instructions:

i. **Attempt all questions from each assignment given below.**
ii. **Each assignment carries 7.5 marks.**
iii. **All questions are to be attempted in legible handwriting on plane white A-4 size paper.**

Assignment – 1

Q-1: Discuss the utility of MIS in Controlling.

(5 marks)

Q-2: Explain the concept of Efficiency and Effectiveness?

(5 marks)

Q-3: Explain the characteristics of MIS.

(5 marks)

Assignment– 11

Q-1: Why MIS requires modifications?

(5 marks)

Q-2: Write a short note on DSS.

(5 marks)

Q-3: Explain physical flow diagram and logical flow diagram.

(5 marks)

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR
DIRECTORATE OF DISTANCE EDUCATION

Programme: MCA 5 year int. Course **Year 5th**

Course: Principles of Programming Language **Code: MCA-501**

Total Marks=30

Important Instructions:

i. **Attempt all questions from each assignment given below.**
ii. **Each assignment carries 15 marks.**
iii. **All questions are to be attempted in legible handwriting on plane white A-4 size paper.**

ASSIGNMENT-I

Q1. Describe the principle of programming language? Explain its objectives of programming language. (5)

Q2. Explain Object oriented programming? What are its key concepts? (5)

Q3. Give an ambiguous and unambiguous grammar for the language defined as "the set of strings of any length generated over {0, 1}*. (5)

ASSIGNMENT-II

Q1. Explain the implementation of direct-access files (5)

Q2. Define Classes and Polymorphism. (5)

Q3. Explain the static and dynamic scope of an identifier with their rules. (5)

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR
DIRECTORATE OF DISTANCE EDUCATION

Programme: MCA **Course: Advanced Architecture and Parallel Processing**

Year: 5th, Code: MCA-502 **Total Marks=30**

Important Instructions:

I. Attempt all questions given below.
II. Each assignment carries 15 marks.
III. All questions are to be attempted in legible handwriting on plane white A-4 size paper.

ASSIGNMENT-I

1. Explain any four static connection networks and ant three dynamic connection networks.
2. Describe different program flow mechanisms and compare them.
3. Compare superscalar and vector processor.

ASSIGNMENT-II

1. Describe cache memory organization using different types of mapping.
2. Explain the working of an asynchronous and synchronous pipeline processor.
3. Explain the term collision free scheduling with reference to non-linear pipelines.

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR
DIRECTORATE OF DISTANCE EDUCATION

Programme: MCA -5 Year **Course: Object Oriented Design and Modelling**
Year: 5th **Code: MCA-503**
Total Marks=30

Important Instructions:

i. **Attempt all questions from each assignment given below.**
ii. **Each assignment carries 15 marks.**
iii. **All questions are to be attempted in legible handwriting on plane white A-4 size paper.**

Assignment – 1

Q-1: How object-based programming languages are different from object-oriented programming languages?

(5 marks)

Q-2: Write down the various steps involved in object oriented design.

(5 marks)

Q-3: Write a short note on Meta Data.

(5 marks)

Assignment– 11

Q-1: Explain any one architectural framework.

(5 marks)

Q-2: Write down about the specification of class dependencies.

(5 marks)

Q-3: What are events and states?

(5 marks)

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY, HISAR
DIRECTORATE OF DISTANCE EDUCATION

Programme: MCA 5 year int. Course **Course: System Simulation and Modeling**

Year 5th **Code: MCA-504**
Total Marks=30

Important Instructions

i. **Attempt all questions from each assignment given below.**
ii. **Each assignment carries 15 marks.**
iii. **All questions are to be attempted in legible handwriting on plane white A-4 size paper.**

ASSIGNMENT-I

Q1. What are model? What do you mean by modelling process? (5)

Q2. Differentiate between differential and partial differential equation model? Also compare model data with real system data? (5)

Q3. Write a short note on: Combining discrete event. (5)

ASSIGNMENT-II

Q1. Differentiate between Verification and validation modeling procedures? (5)

Q2. What do you mean by simulation process? Explain concept of simulation of a time sharing computer system? (5)

Q3. What are simulation languages? Explain any language in detail? (5)

Programme: Master in Computer Application **Course: Data Mining and Data Warehousing** **Total marks=30**

Year: 5th Code: MCA-505

Important Instructions

i. **Attempt all questions from each assignment given below.**
ii. **Each assignment carries 15 marks.**
iii. **All questions are to be attempted in legible handwriting on plane white A-4 size paper.**

ASSIGNMENT (PART-I)

I The following table consists of training data from an employee database. The data have been generalized. For example, "31: : : 35" for *age* represents the age range of 31 to 35. For a given row entry, *count* represents the number of data tuples having the values for *department, status, age,* and *salary* given in that row.

department	*status*	*age*	*salary*	*count*
sales	senior	31: : :35	46K: : :50K	30
sales	junior	26: : :30	26K: : :30K	40
sales	junior	31: : :35	31K: : :35K	40
systems	junior	21: : :25	46K: : :50K	20
systems	senior	31: : :35	66K: : :70K	5
systems	junior	26: : :30	46K: : :50K	3
systems	senior	41: : :45	66K: : :70K	3
marketing	senior	36: : :40	46K: : :50K	10
marketing	junior	31: : :35	41K: : :45K	4
secretary	senior	46: : :50	36K: : :40K	4
secretary	junior	26: : :30	26K: : :30K	6

Let *status* be the class label attribute.

Given a data tuple having the values *"systems," "26 . . . 30,"* and *"46–50K"* for the attributes*department, age*, and *salary*, respectively, what would a naive Bayesian classification of the *status* for the tuple be? 6

II Why separation is required between an operational database and a data warehouse system? 4

III What is correlation analysis? How it is needed in data integration for handling redundancies? 5

ASSIGNMENT (PART-II)

I The following table consists of training data from an employee database. The data have been generalized. For example, "31 : : : 35" for *age* represents the age range of 31 to 35. For a given row entry, *count* represents the number of data tuples having the values for *department, status, age,* and *salary* given in that row.

department	*status*	*age*	*salary*	*count*
sales	senior	31: : :35	46K: : :50K	30
sales	junior	26: : :30	26K: : :30K	40
sales	junior	31: : :35	31K: : :35K	40
systems	junior	21: : :25	46K: : :50K	20
systems	senior	31: : :35	66K: : :70K	5
systems	junior	26: : :30	46K: : :50K	3
systems	senior	41: : :45	66K: : :70K	3
marketing	senior	36: : :40	46K: : :50K	10
marketing	junior	31: : :35	41K: : :45K	4
secretary	senior	46: : :50	36K: : :40K	4
secretary	junior	26: : :30	26K: : :30K	6

Let *status* be the class label attribute

Calculate information gain for *age*, *salary* and *department*. Also elaborate the steps of calculations. 5

II How a data cube models n-dimensional data? What is a lattice of cuboids? 5

III How Principal Component analysis reduces the dimensions for a data set? 5