

**MASTER OF COMPUTER APPLICATION**  
**(5 Years Integrated)**

# **ASSIGNMENTS**

**MCA 5<sup>th</sup> Year**



**(SESSION 2023-2024)**

**Centre for Distance and Online  
Education Guru Jambheshwar  
University of Science & Technology  
Hisar - 125001**

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

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

**Year 5<sup>th</sup>**

**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)

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**Programme: MCA**

**Course: Advanced Architecture and Parallel Processing**

**Year: 5<sup>th</sup>, 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**

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

**ASSIGNMENT-II**

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

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**Programme: MCA -5 Year  
Year: 5<sup>th</sup>**

**Course: Object Oriented Design and Modelling  
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)

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

**Year 5<sup>th</sup>**

**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)

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**DIRECTORATE OF DISTANCE EDUCATION**

**Programme: Master in Computer Application**  
**Warehousing**  
**Year: 5<sup>th</sup> Code: MCA-505**

**Course: Data Mining and Data**  
**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 (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.

<i>department</i>	<i>status</i>	<i>age</i>	<i>salary</i>	<i>count</i>
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.

<i>department</i>	<i>status</i>	<i>age</i>	<i>salary</i>	<i>count</i>
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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