

MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)

M.C.A. Sem-I : WINTER: 2025

SUBJECT: APPLIED DATABASE MANAGEMENT SYSTEMS

Day : Friday
Date : 07/11/2025

W-25932-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

- 1) Attempt any FIVE questions from Section – I.
- 2) Attempt any TWO questions from Section – II.
- 3) Figures to the RIGHT indicate FULL marks.
- 4) Answer to both the sections should be written in the SAME answer books.
- 5) Draw neat diagram WHEREVER necessary.

SECTION – I

- Q.1 Explain the Hierarchical, Network, and Relational Data Models. (08)
- Q.2 Explain the different types of inner joins with suitable example. (08)
- Q.3 Explain Relational Algebra operators with suitable example. (08)
- Q.4 Explain ACID properties of a transaction and its different States. (08)
- Q.5 Explain Shadow Paging Technique with example. (08)
- Q.6 Write short answer question on ANY TWO of the following: (08)
- a) Functional dependencies
 - b) Data dictionary
 - c) Mongo DB functionalities

SECTION – II

- Q.7 A hospital database system is designed to store information about patients, doctors, and appointments. Design an ER diagram for the system, showing entities, attributes and relationships. Convert the ER diagram into relational tables. (10)
- Q.8 Examine the following document and normalize up to 3NF. (10)

Service Call Report

Customer Code : _____
Date of Call : _____
Time : _____

Customer Name : _____
Address: _____

Sr. No.	Machine Name	Problem	Spare Used	Qty	Rate
				Total	
				Service Charges	
				Grand Total	

Customer Remark: _____
Engineer Code: _____
Engineer Name: _____
Date: _____

Customer Signature

- Q.9 Explain concurrency control mechanism. (10)

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MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)

M.C.A. Sem-I : WINTER: 2025

SUBJECT: JAVA PROGRAMMING

Day : Monday
Date : 10/11/2025

W-25934-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.:

- 1) Section I- Attempt any **FIVE** questions. Each questions carries **08** marks.
- 2) Section II- Attempt any **TWO** questions. Each questions carries **10** marks.
- 3) Figures to the right indicate **FULL** marks.
- 4) Answers to both the sections should be written in **SAME** answer book.

SECTION-I

40 Marks

			CO	BL
Q.1	What is packages? Explain the steps to create and access user defined package.	(08)	CO1	BL4
Q.2	Discuss how to set priority to thread? Explain with example.	(08)	CO1	BL2
Q.3	What is Java? Explain history and features of Java.	(08)	CO1	BL2
Q.4	What is constructor? Explain the types of constructors in Java.	(08)	CO2, CO3	BL2
Q.5	Explain in detail Multidimensional array in Java.	(08)	CO1	BL2
Q.6	What is Abstraction? Explain the use of abstract keyword in Java.	(08)	CO2, CO3	BL1, BL3
Q.7	Write short notes on any TWO :	(08)		
a)	Access Modifier		CO2, CO3	BL2
b)	Linked List		CO4	BL2
c)	Deserialization		CO5	BL2

SECTION-II

20 Marks

Q.8	Write a Java Program to convert Hexadecimal number to decimal number.	(10)	CO1	BL3, BL6
Q.9	Write a Java Program to implement Binary Tree.	(10)	CO4	BL3
Q.10	Write a Java Program to compare Paths of two files.	(10)	CO5	BL3

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MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-I : WINTER: 2025
SUBJECT: COMPUTER NETWORKS

Day : Wednesday
Date : 12/11/2025

W-25933-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.:

- 1) Section- I – Attempt any **FIVE** questions. Each question carries **08** marks.
- 2) Section – II- Attempt any **TWO** questions. Each question carries **10** marks.
- 3) Answer to both the sections should be written in the **SAME** answer book.

SECTION-I

40 Marks

			CO	BL
Q.1	What is protocol? Explain TCP, SMTP, MIME, POP and IMAP.	(08)	CO5	BL2
Q.2	Explain broadcast routing and multicast routing.	(08)	CO3	BL2
Q.3	Explain in brief OSI model with the help of next diagram.	(08)	CO1	BL3
Q.4	Explain data encryption and data security.	(08)	CO4	BL2
Q.5	Define multiplexing. Explain FDM and TDM.	(08)	CO2	BL2
Q.6	Write short notes on any TWO :	(08)		
	a) Connection oriented and connection less network		CO1	BL3
	b) X.25		CO1	BL2
	c) Spectrum		CO2	BL2

SECTION-II

20 Marks

Q.7	What is the role of congestion control algorithm in network? Explain different congestion prevention policies.	(10)	CO3	BL3
Q.8	Find the class of each IP address given below. Give the suitable explanation for your answer i) 224. 16. 19. 25 ii) 198. 16. 240. 80 iii) 125. 250. 240. 70 iv) 135. 11. 78. 56 v) 255. 255. 255. 255	(10)	CO3	BL4
Q.9	Design a network layer for your college. Suggest different topology for your college network with their advantages and disadvantages.	(10)	CO1	BL5

MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-I : WINTER: 2025
SUBJECT: COMPUTATIONAL STATISTICS

Day : Friday
Date : 14/11/2025

W-25935-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.:

- 1) Attempt **ANY FIVE** questions from Section – I and attempt **ANY TWO** questions from Section – II.
- 2) Answers to both the sections should be written in the **SAME** answer book.
- 3) Use of non-programmable **CALCULATOR** is allowed.
- 4) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1 Calculate Mean, Median and Mode for given data: [08]

Class	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Frequency	4	7	8	10	6	5

Q.2 Calculate Karl Pearson's coefficient of skewness for given data: [08]

Year	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
No. of persons	10	40	20	0	10	40	16	14

Q.3 What is R Programming? Discuss the concept of cluster in detail. [08]

Q.4 What is Statistics? Explain types of data in Statistics. [08]

Q.5 Calculate Quartile Deviation and its coefficient for given data: [08]

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	12	18	15	19	16

Q.6 Write short notes on **ANY TWO** of the following: [08]

- a) Grouped Frequency Distribution
- b) Harmonic Mean
- c) Scatter Diagram

SECTION – II

Q.7 In an art competition, two judges allocated following ranks to 10 participants. [10]

Judge X	1	2	3	4	5	6	7	8	9	10
Judge Y	6	2	9	7	1	4	8	3	10	5

Calculate Spearman's rank correlation coefficient.

Q.8 What is time series? Explain various components of time series. [10]

Q.9 For given data: [10]

X	1	2	3	4	5	6	7
Y	9	8	10	12	11	13	14

Find : a) Regression Equation X on Y b) Regression Equation Y on X.

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MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-I : WINTER: 2025
SUBJECT: MANAGEMENT CONCEPTS & APPLICATIONS

Day : Tuesday
Date : 18/11/2025

W-25936-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N. B. :

- 1) **Section – I** – Attempt **ANY FIVE** questions. Each question carries **08** marks.
- 2) **Section – II** – Attempt **ANY TWO** questions. Each question carries **10** marks.
- 3) Answers to both the sections should be written in **SAME** answer book.
- 4) To the right of each question are mentioned (i) figures, indicating **FULL** marks, (ii) Course Outcome number (CO) and (iii) Blooms Taxonomy level (BL).

SECTION – I

40 Marks

- | | | CO | BL |
|------|---|----------|-----|
| Q. 1 | Explain any 2 definitions and nature of management with suitable example from IT business organization. | (08) CO1 | BL1 |
| Q. 2 | What are the differences between strategic, tactical and operational plans? | (08) CO2 | BL2 |
| Q. 3 | Describe the steps involved in organizing process. | (08) CO2 | BL2 |
| Q. 4 | Elaborate on recruitment and selection of employees. | (08) CO4 | BL3 |
| Q. 5 | Compare and contrast responsibility and authority. | (08) CO5 | BL3 |
| Q. 6 | Write short notes on ANY TWO | (08) | |
| | a) Mechanistic structures | CO2 | BL3 |
| | b) Challenges of E-commerce | CO3 | BL4 |
| | c) Expert systems | CO3 | BL3 |

SECTION – II

20 Marks

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|------|--|----------|-----|
| Q. 7 | What are the main responsibilities of a software team leader? What kind of characteristics should a leader have, for completing these responsibilities? | (10) CO5 | BL5 |
| Q. 8 | Suppose an organisation wants to take decision to expand into new market, which decision making techniques could organization use so that it could understand risks and benefits. How can technology support this process? | (10) CO3 | BL5 |
| Q. 9 | Enlist the common limitations and challenges associated with organizational planning and how can managers solve these limitations to enhance planning process. | (10) CO6 | BL5 |