

MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-I : WINTER : 2023
SUBJECT : APPLIED DATABASE MANAGEMENT SYSTEMS

Day : Monday

Time : 02:00 PM-05:00 PM

Date : 20-11-2023

W-25932-2023

Max. Marks : 100

N.B.

- 1) Attempt **ANY FIVE** questions from **SECTION-I**
- 2) Attempt **ANY TWO** questions from **SECTION-II**
- 3) Marks to the right indicate full marks.
- 4) Answers to both sections should be written in same answer book.

SECTION - I

- Q.1** a) Explain different types of database systems. (06)
b) Describe Extended Entity Relationship Model. (06)
- Q.2** a) Explain Functional Dependencies with suitable example. (06)
b) Explain data encryption and decryption. (06)
- Q.3** a) Explain ACID properties. (06)
b) Explain Distributed Database Architecture. (06)
- Q.4** Explain normalization and its different forms with suitable example. (12)
- Q.5** a) What is Relational Algebra? Explain SELECT and PROJECT operator with example. (06)
b) Describe NoSQL architecture. (06)
- Q.6** Write short notes on any TWO of the following: (12)
a) Shadow Paging
b) Mapping Cardinalities
c) BCNF

SECTION - II

- Q.7** a) Explain Serializability of schedules with suitable example. (10)
b) Explain Relational and Network Data Model. (10)
- Q.8** a) Explain Lossy and Lossless decomposition. (10)
b) Explain Composite Key, Candidate Key, Primary Key, Secondary Key and Foreign Key with suitable example. (10)
- Q.9** a) Explain different types of database failures. (10)
b) Explain any two MongoDB functionalities. (10)

MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)

M.C.A. Sem-I : WINTER : 2023

SUBJECT : COMPUTER NETWORKS

Day : Wednesday

Time : 02:00 PM-05:00 PM

Date : 22-11-2023

W-25933-2023

Max. Marks 100

N.B.:

- 1) Attempt **ANY FIVE** questions from Section – I and **ANY TWO** questions from Section – II.
- 2) Answers to both the section should be written in the **SAME** answer book.
- 3) Figures to the right indicate **FULL** marks.

SECTION – I

- Q.1 What is the importance Multiplexing? Explain FDM in detail. [12]
- Q.2 Explain in brief OSI Model with the help of neat diagram. [12]
- Q.3 What is Link State Routing Algorithm? Explain its advantages [12]
- Q.4 What is Protocol? Explain in brief about FTP, SMTP, SNMP, MIME and POP. [12]
- Q.5 What is IP Address? Explain various classes of IP address. [12]
- Q.6 Write short notes on **ANY TWO** of the following: [12]
- a) Wireless Sensor Network (WSN)
 - b) Principles of Congestion Control
 - c) Shortest Path Routing

SECTION – II

- Q.7 What is Mobile Ad-HOC Network? Explain On-demand Distance Vector Protocol for MANET. [20]
- Q.8 Find the class of each IP address given below. Give the suitable justification for your answer: [20]
- | | |
|-------------------------|--------------------------|
| a) 224 . 16 . 19 . 25 | d) 135 . 11 . 78 . 56 |
| b) 198 . 16 . 240 . 80 | e) 255 . 255 . 255 . 255 |
| c) 125 . 250 . 240 . 70 | f) 190 . 190 . 10 . 10 |
- Q.9 Design a Network Layout for your College. Suggest different Topologies for your College Network with their advantages and disadvantages. [20]

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MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)

M.C.A. Sem-I : WINTER : 2023

SUBJECT : JAVA PROGRAMMING

Day : Friday

Time : 02:00 PM-05:00 PM

Date : 24-11-2023

W-25934-2023

Max. Marks : 100

N.B:

- 1) Attempt any **FIVE** questions form Section-I. Each question carries 12 marks.
- 2) Attempt any **TWO** questions form section –II. Each questions carries 20 marks.

Section-I

- Q.1 Explain the role of compiler and JVM in Java. (12)
- Q.2 Explain various access modifiers used in Java. (12)
- Q.3 What is string class in Java? Explain string functions. (12)
- Q.4 State the importance of inheritance in Java. Explain the types of inheritance. (12)
- Q.5 What is multithreading? Explain the life cycle of thread. (12)
- Q.6 Write **Short Notes** on ANY TWO: (12)
- a) Abstraction
 - b) Garbage collection
 - c) Hashtable

Section-II

- Q.7 Write a Java program to demonstrate user defined exception handling. (20)
- Q.8 Write a Java program to find frequency of odd and even numbers in the given two dimensional array. (20)
- Q.9 Write a Java program to create, access and import user defined package. (20)

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MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-I : WINTER : 2023
SUBJECT : COMPUTATIONAL STATISTICS

Day : Tuesday

Time : 02:00 PM-05:00 PM

Date : 28-11-2023

W-25935-2023

Max. Marks : **100**

N.B.:

- 1) Attempt **ANY FIVE** questions from **Section – I**. Each question carries **12** marks.
- 2) Attempt **ANY TWO** questions from **Section – II**. Each question carries **20** marks.
- 3) Use of non-programmable calculator is allowed.
- 4) Answer to both the sections should be written in **SAME** answer book.

SECTION - I

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

Daily wages (in Rs.)	20-25	25-30	30-35	35-40	40-45	45-50	50-55
No. of workers	14	28	33	30	20	15	13

Q.2 What is Statistics? Explain Scope of Statistics in detail.

Q.3 Explain the following:

- a) Quartile, Deciles and Percentiles b) Types of Kurtosis

Q.4 Calculate Quartile Deviation for the following distribution.

Classes	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Freq.	5	3	4	3	3	4	7	9	7	8

Q.5 The table gives the number of children of 80 families in a village.

No. of children	0	1	2	3	4	5
No. of families	12	23	16	9	10	10

Calculate Bowley's Coefficient of Skewness.

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

- a) Harmonic Mean
- b) Frequency distribution
- c) R Programming.

SECTION - II

Q.7 a) Explain Karl Pearson's Coefficient of Correlation.

b) Compute Karl Pearson's Coefficient of Correlation for the following data

X	10	20	30	40	50	60	70
Y	8	6	14	16	10	20	24

Q.8 Explain the following :

- a) Characteristics of good measure of dispersion.
- b) Moving Average Method in Time Series.

Q.9 For the given data:

- a) Calculate Correlation Coefficient.
- b) Obtain Regression equation X on Y and Y on X.
- c) Find Y when X = 10.

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

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