

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

Day : Tuesday

Time : 02:00 PM-05:00 PM

Date : 29-11-2022

W-25932-2022

Max. Marks : **100**

N.B.

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

SECTION – I

- Q.1** Explain Database Architecture. (12)
- Q.2** State Codd's 12 rules for RDBMS. (12)
- Q.3** a) Explain any three Role and Responsibilities of DBA. (06)
b) What is transaction? Explain transaction states. (06)
- Q.4** Explain different set operations of Relational Algebra. (12)
- Q.5** Explain Timestamp based protocol. (12)
- Q.6** Write short notes on any **TWO** of the following: (12)
a) Mapping Cardinalities
b) Relational Data Model
c) Static and Dynamic hashing

SECTION - II

- Q.7** a) What is MongoDB? Explain its different functionalities. (10)
b) Explain different strengths and weaknesses of NoSQL. (10)
- Q.8** a) Normalize the following table up to 3NF: (10)
Scenario: Customers belong to a particular branch, this branch is supervised by a particular manger. Customers purchase stock. Each stock has a particular title and format. The different field headings are :
CustomerID (PK), Name, Address, BranchID, BranchMgr, StockID, Title, format.
b) Explain data encryption and decryption. (10)
- Q.9** Consider the following requirements of a University Database System. (20)
The university keep track of its students. It stores the student details as StudName, EntrollementID, BirthDate, MobileNumber, Gender and Address. The university also keeps track of the courses offered by it. The information that is to be kept about the courses are CourseCode, CourseName, fees, Eligibility and CourseStartingDate. The university has many departments. A course associated with only one department. Each department has a location address and name. A Student can register only for one department at a time. Draw Entity Relationship Diagram(ERD) for the university. Also map ERD into relational model. Make suitable assumptions if any.

MASTER OF COMPUTER APPLICATIONS (CBCS – 2022 COURSE)

M.C.A. Sem – I : WINTER- 2022

SUBJECT : COMPUTER NETWORKS

Day : Thursday

Time : 02:00 PM-05:00 PM

Date : 1/12/2022

W-25933-2022

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) Figures to the right indicate **FULL** marks.

SECTION – I

- Q. 1 Define network topologies. Explain different types of network topologies in detail. (12)
- Q. 2 What are wireless sensor networks? Explain its applications. (12)
- Q. 3 What is the functionality of application layer? Explain at least two protocols used in application layer. (12)
- Q. 4 What is switching? Explain message switching and packet switching. (12)
- Q. 5 What is synchronous and asynchronous transmission? Differentiate between synchronous and asynchronous transmission. (12)
- Q. 6 Write short notes on **ANY TWO** of the following: (12)
- a) WWW
 - b) Multiplexing
 - c) IPV6

SECTION – II

- Q. 7 Find the class of each IP address given below; give the suitable explanation for your answer: (20)
- i) 227.12. 14. 87
 - ii) 193. 14. 56. 22
 - iii) 14. 23. 720. 8
 - iv) 252. 5. 15. 111
 - v) 134. 11. 78. 56
 - vi) 224. 220. 24. 6
- Q. 8 What is MANET? What are the applications of MANETs? Explain destination sequenced distance vector protocol for MANET. (20)
- Q. 9 Design network layout for your college. Suggest different topologies for your college network with their advantages and disadvantages. (20)

MASTER OF COMPUTER APPLICATIONS (CBCS – 2022 COURSE)
M.C.A. Sem – I : WINTER- 2022
SUBJECT : JAVA PROGRAMMING

Day : Saturday

Time : 02:00 PM-05:00 PM

Date : 3/12/2022

W-25934-2022

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) Figures to the **RIGHT** indicate **FULL** marks.
 - 4) Answers to both the sections should be written in **SAME** answer book.
 - 5) Draw a labeled diagram **WHEREVER** necessary.
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SECTION – I

- Q.1** What is thread? Explain thread synchronization. (12)
- Q.2** What is buffered stream? Explain buffered reader and buffered writer class. (12)
- Q.3** What is Type Casting? Explain type casting with example. (12)
- Q.4** What is Function? Explain the need of function in Java. (12)
- Q.5** Explain the use of Abstract and final keyword in Java. (12)
- Q.6** Write short notes on **ANY TWO** of the following : (12)
- a) Tree set
 - b) JVM
 - c) Method overloading

SECTION – II

- Q.7** a) Write a Java Program to demonstrate constructor overloading. (10)
b) Write a Java Program to create and implement a package in Java. (10)
- Q.8** a) Write a Java Program to read content from one file and write to another file. (10)
b) Write a Java Program to sort the elements of 1-D Array. (10)
- Q.9** a) Write a Java Program to demonstrate user defined exception handling. (10)
b) Write a Java Program to find the factorial of a given number. (10)

MASTER OF COMPUTER APPLICATIONS (CBCS – 2022 COURSE)

M.C.A. Sem – I : WINTER- 2022

SUBJECT : COMPUTATIONAL STATISTICS

Day : Tuesday

Time : 02:00 PM-05:00 PM

Date : 6/12/2022

W-25935-2022

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) Figures to the **RIGHT** indicate **FULL** marks.
- 4) Answers to both the sections should be written in **SAME** answer book.
- 5) Use of non-programmable calculator is **ALLOWED**.

SECTION – I

Q.1 'The science of Statistics is a most useful servant but only a great value to those who understand its proper use-King.' Comment on the above statement and discuss the scope of statistics. (12)

Q.2 Define R. Explain various data types in R. (12)

Q.3 Calculate mean, median and mode for the following data. (12)

Classes	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	2	4	10	18	8	4	3	1

Q.4 Calculate mean deviation from median for the following data. (12)

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	10	16	30	32	50	40	12

Q.5 Fit a straight line trend for the following data by taking 3 yearly moving averages. (12)

Year	2007	2008	2009	2010	2011	2012	2013
Sales (Rs '000)	30	36	28	19	29	35	40

Q.6 Write short notes on **ANY TWO** of the following : (12)

- a) Components of time series
- b) Concept of raw and central moments
- c) Characteristics of a good statistical average

SECTION – II

Q.7 For the following data, calculate Karl Pearson's coefficient of correlation. (20)
Also obtain the two regression equations.

X	36	23	27	28	28	29	30	31	33	35
Y	29	18	20	22	27	21	29	27	29	28

Q.8 a) Explain various types of statistical data with suitable examples. (10)

b) Explain the concepts: Skewness and Kurtosis. (10)

Q.9 The weekly sales of two products A and B were recorded as below. (20)

Product A	59	75	27	63	27	28	56
Product B	150	200	125	310	330	250	225

Calculate coefficient of variation and find which of the product shows greater fluctuation in sales.

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

Day : Thursday

Time : 02:00 PM-05:00 PM

Date : 8/12/2022

W-25936-2022

Max. Marks : **100**

N.B.:

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

- Q.1** Describe principles of Management by Henry Fayol. (15)
- Q.2** Give importance of decision making. Discuss process of decision making in detail. (15)
- Q.3** Explain the role of staffing function in management. Describe various sources of recruitment. (15)
- Q.4** What do you mean by “Controlling” in management? Briefly describe the control mechanism. (15)
- Q.5** Describe features and importance of SMART objectives. Elaborate with suitable example. (15)
- Q.6** Write short notes on **ANY TWO** of the following: (15)
- a) M.B.O. (Management By Objectives)
 - b) Role of software team leader
 - c) Difference between Authority and Responsibility

SECTION-II

- Q.7** Summarize the advantages and disadvantages of centralisation. Describe a situation where centralisation is highly effective. (20)
- Q.8** You are appointed as a HR manager in midsize IT company. What type of organization structure you will suggest? Justify your answer. (20)
- Q.9** “Management is both science and an art”. Examine the statement critically. (20)

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