

Master of Computer Application
Second Semester Main Examination, June-2021
Operating System [MCA201]

Time: 3:00 Hrs

Max Marks 70

Note: Answer all five questions. All question carry equal marks.

- Q.1 (a) Discuss the main characteristics of the database approach and how it differs from traditional file system.
(b) What do you understand by distributed databases? Give the various advantages and disadvantages of distributed database management systems.
- Q.2 (a) Differentiate among candidate key, primary key, super key and foreign key.
(b) Describe the overall structure of a general database management system.
- Q.3 (a) What is normalization? Why is it needed? Discuss all the normal forms in detail.
(b) What is the difference between 3 NF & BCNF?
- Q.4 (a) Explain the structure of a B+ tree index. How is it different from a B Tree index? Explain how updates are performed in both the types
(b) What does the DBMS do when constraints are violated? What is referential integrity? What options does SQL give application programmers for dealing with violations of referential integrity?
- Q.5 (a) Draw an ER diagram for a small marketing company database. Assume suitable data.
(b) Define the concept of aggregation. Give several examples of where this concept is useful.
- Q.6 (a) Explain deadlock prevention schemes?
(b) What are integrity constraints? Define the term primary key constraint and foreign key constraint. How are these constraints expressed in SQL?
- Q.7 Write short notes on:
(i) DBTG model
(ii) ACID properties
(iii) RAID

Master of Computer Application
Second Semester Main Examination, June-2021
Data Base Management System [MCA202]

Time: 3:00 Hrs

Max Marks 70

Note: (i) All questions carry equal marks
(ii) Answer should be precise and to the point only.
(iii) Assume suitable data if necessary and state them clearly

- Q.1 (a) What is DBMS? Explain basic operation of DBMS? What are the advantages of DBMS?
(b) DRAW E-R diagram for library management system and convert into set of schema?
- Q.2 (a) What is Normalization? Explain second normal form with the help of an example.
(b) Draw an ER diagram for a small marketing company database. Assume suitable data.
- Q.3 (a) Define the concept of aggregation. Give several examples of where this concept is useful.
(b) Explain deadlock prevention schemes?
- Q.4 (a) What are the problems caused by data redundancies? Can data redundancy be completely eliminated when a database approach is used?
(b) Explain the advantages and disadvantages of distributed database
- Q.5 Define following: (i) Aggregation (ii) Check constraints (iii) dangling tuple problem locks

Master of Computer Application
Second Semester Main Examination, June-2021
Data Structure [MCA203]

Time: 3:00 Hrs

Max Marks 70

Note : Attempt all questions.

- Q.1 (a) Implement the push and Pop operation on a stack.**
(b) Compare and contrast exponential time complexity with polynomial time complexity.

OR

- (a) Define AVL Tree.**
(b) What is doubly linked list? Compare doubly linked list and singly linked list?

- Q.2 (a) Describe Kruskal's minimum cost spanning tree algorithm?**
(b) How can graph traversal procedures help in detecting graph connectivity?

OR

- (a) Write a program to evaluate a postfix expression using a linked stack implementation.**
(b) Explain the working of binary search.

- Q.3 (a) Distinguish between best, worst and average case complexities of an algorithm.**
(b) How are push and pop operations implemented on a linked stack?.

OR

- (a) Write an algorithm to insert a node into a binary search tree.**
(b) How is the deletion of a node that has both left and right sub trees, undertaken in a binary search tree?

- Q.4 (a) Compare and contrast exponential time complexity with polynomial time complexity.**
(a) Implement a DE queue DQUE in a one dimensional array.

- Q.5 (a) How is binary search tree representation of lists advantageous over their sequential list representations?**
(b) Distinguish between internal sorting and external sorting

Master of Computer Application
Second Semester Main Examination, June-2021
Computer Oriented Numerical & Statistical Methods
[MCA204]

Time: 3:00 Hrs**Max Marks 70****Note: Answer all five questions. All questions carry equal marks.**

- Q.1 (a) Using regula-falsi method compute the real root of equation correct to four decimal number : $\cos x = 3x - 1$
 (b) Explain Simpson's 1/3rd and 3/8th rule. With suitable example?
 OR
 (a) What is the Lagrange's Interpolation derive with the help of theorem?
 (b) Evaluate Square root 30 by iteration method correct to four decimal places.
- Q.2 (a) In a normal distribution, 31% of the items are the under 45 and 8% are over 64. Find the mean and standard deviation of the distribution?
 (b) What do you understand by normalized floating point number explain with example?
 OR
 (a) A machine puts out 20 imperfect articles in a sample of 400. After the maximum overhauled puts out 10 imperfect article in the batch of 300 has the machine be improve? Explain how?
 (b) Find the real root of equation $x^e = \cos x$ correct three decimal number by the method of false position.
- Q.3 (a) Explain Euler's method for the salutation of differential equation ?
 (b) What is meant by testing of Hypothesis ? Erplain the term type I and type II error.
 OR
 (a) Solve the equation by gauss elimination method $x + 2y + z = 3$,
 $2x + 3y + 3z = 10$, $3x - y + 2z = 13$
 B) Solve by gauss seidel method of the following system $28x + 4y - z = 32$,
 $x + 3y + 10z = 24$, $2x + 17y + 4z = 35$
- Q.4 (a) Find the positive root $x - \cos x$ by bisection method up to five steps ?
 (b) What is the Newton Raphson methods? Derive its formula.
- Q.5 Write short note on the following:
 i) Hypothesis testing ii) Parameter and Statistics
 iii) Chi square test iv) Null Hypothesis

Master of Computer Application
Second Semester Main Examination, June-2021
Accounting & Management Control [MCA205]

Time: 3:00 Hrs

Max Marks 70

Note: Answer all five questions.

All questions carry equal marks.

- Q.1 (a) Define meaning and objects of accounting with any example?
(b) Define concepts of Responsibility centers. And explain contents?

OR

- (a) What do you mean by accounting concepts? Explain any two.
(b) Write short notes on:
i) Outstanding expenses and prepaid expenses.
ii) Bad debts and provision for bad debts.

- Q.2 (a) Explain trading and profit and loss account and balance sheet?
(b) What do you mean by accounting concepts? Explain any two.

OR

- (a) What do you understand by Inventory? Discuss objectives of inventory pricing and essentials of inventory control.
(b) What is the need for preparing financial account? Explain stages of financial account.

- Q.3 (a) The fixed costs for the year 2009-2010 are Rs.8,00,000. Variable cost per unit is Rs.40. find the breakeven point. Each unit sells at Rs.200.
(b) What is standard cost? Why do we use a standard cost system?

- Q.4 (a) what are financial Accounts? Define method of preparing financial Accounts.
(b) What is the difference between funds flow statement and cash flow statements?

OR

- (a) What do you understand by the term Budget and Budgetary Control? What are the advantages and limitations of budgetary control?
(b) What is the difference between budgetary control and standard costing?

- Q.5 Write short notes on the following:
i) Responsibility reporting.
ii) Responsibility accounting.
iii) PERT/CPM. Zero - base budgeting.