

Roll No. ....

Total Pages : 4

MCA/M-15

**10314**

**DATABASE MANAGEMENT SYSTEM**

Paper-CS-DE-14

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note :** Attempt **five** questions in all, selecting at least **one** question from each Unit. Question No. 1 is compulsory.

**Compulsory Question**

1. (a) Explain the concepts : Data, Information and Knowledge. 2
- (b) What are the advantages of Database usage? 2
- (c) What do you mean by an Entity? Explain with example. 2
- (d) What is an E-R diagram? 2
- (e) How can you define a Query? Explain. 2
- (f) What is a Normal form? 2
- (g) Give examples of DBMS. How MS-Access differs from MS-Windows? 2
- (h) Explain in detail : Forms and Reports. 2

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### UNIT-I

2. (a) What do you understand by Data structure? How can you classify data structures? 8
- (b) Write down the algorithm for inserting and element at kth position in an array. 8
3. (a) What is Sparse matrix? How can you store a sparse matrix using linear array? Explain. 8
- (b) Write a pattern matching algorithm to match a pattern within a given text. 8

### UNIT-II

4. Explain the methods to store a queue in computer memory. How a queue is different from dequeue and priority queue? Explain the memory representation of dequeue and priority queue as well. Write and explain one application of queue in brief. 16
5. (a) Differentiate between the following : 8
- (a) Array and Linked List
- (b) Circular Linked List and Header Linked List.
- (b) Write down an algorithm to insert an element in a linked list after a given node. 8

### UNIT-III

6. What is a Binary tree? Explain various traversal methods on a binary tree in brief. Write an algorithm to traverse a binary tree using any one method and explain with the help of suitable example. 16

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7. What do you mean by Polish notation? Write down the algorithms for converting an infix expression into a postfix expression and evaluating the postfix expression. Explain both the algorithms with the help of suitable examples. 16

### UNIT-IV

8. (a) Explain the following terms w.r.t. Graph : 8
- (i) Graph
- (ii) Multigraph
- (iii) Adjacency matrix
- (iv) Path matrix.
- (b) Write the BFS algorithm for traversing a graph. 8
9. Write down the algorithm for searching a number using Linear and Binary Search. Compare both the algorithms on the basis of their complexity and other parameters. Provide suitable examples. 16

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