AU–369

M.Sc. (Part—I) Semester—II (CBCS Scheme) Examination

COMPUTER SCIENCE

2MCS2 : Data Structures

Time : Three Hours] [Maximum Marks : 80

N.B. :— (1) Assume suitable data wherever necessary.

(2) Sketch the diagram wherever necessary.

1. (a) What is Linked List ? Explain the various deletion algorithms performed in Linked List. 8

(b) What is Array ? Explain the various types of Arrays with suitable example. 7

OR

2. (a) What do you mean by doubly linked list ? Explain the algorithm to insert the node into doubly linked list. 8

(b) What is data structure ? Explain the various operations performed on it. 7

3. (a) What is Queue ? Explain the types of Queue. 6

(b) Explain the CPU scheduling algorithm with suitable example. 7

OR

4. (a) What is Stack ? Explain the PUSH and POP operations performed on stack with suitable example. 7

(b) Explain the Round Robin Algorithm with suitable example. 6

5. (a) What is completely Binary Tree ? Explain the linked representation of Binary Search Tree. 7

(b) Explain :

(i) AVL Rotations

(ii) Height Balanced Tree. 6

OR

6. (a) What is the Binary Search Tree ? Explain the algorithm to insert node into Binary Search Tree with suitable example. 7

(b) What is Tree Traversing ? Explain the Inorder Traversing Algorithm with suitable example. 6

7. (a) What is Searching ? Explain the algorithm to search the element using Binary Search with example. 7

(b) Explain the selection sort algorithm with suitable example. 6

OR

8. (a) What is Sorting ? Explain the shell sort algorithm with suitable example. 6

(b) Explain the Index Sequential Search Algorithm with example. 7

9. (a) Explain the graph representation in adjacency matrix. 6

(b) Explain the shortest path algorithm with suitable example. 7

OR

10. (a) Explain the linked list representation of Graph. 7

(b) Explain :

(i) Directed Graph

(ii) Strongly Connected Graph. 6

11. (a) Explain the general ways for minimizing collision in hashing. 7

(b) Explain the B-Tree Indexing with suitable example. 6

OR

12. (a) What is Hashing ? Explain hash function with example. 7

(b) Explain :

(i) Multilevel indexing

(ii) B+ Tree. 6