

C 4311

B.A./B.Com./B.Sc. (Three Year) DEGREE EXAMINATION, MARCH/APRIL 2018.

(End Semester Examination)

Fourth Semester

Part II — Computer Science

(Regular/Supplementary)

Paper IV : DATA STRUCTURES

Time : 3 Hours

Max. Marks : 70

SECTION — A

Answer any FIVE of the following questions. **(5 × 4 = 20 Marks)**

1. What are the applications of singly linked list?
2. Differentiate between time complexity and space complexity?
3. Differentiate POP with PEEP operation of a stack?
4. Define threaded binary tree with an example?
5. What is Graph? Give Adjacency list representation of graph?
6. Give the analysis of Heap Sort Algorithm?
7. What is an algorithm? List out the properties of an algorithm?
8. Explain any application of the Queue?

SECTION — B

Answer ALL questions. **(5 × 10 = 50 Marks)**

9. (a) Differentiate between doubly and circular linked lists.
(b) Write an algorithm to insert, delete and display the elements in a given doubly linked list.

Or

- (c) Explain about the insert and delete operations in a singly linked list.
- (d) Write an algorithm to reverse a given linked list.

Turn Over

10. (a) Discuss about the stack with examples? and Write an algorithm to implement queue using stack.
- Or
- (b) What is priority Queue? Explain the implementation of Priority queue? Write an algorithm for operations on Priority queues?
11. (a) What is Binary tree? Differentiate from the trees? Explain the Linked list representation of the binary tree? Give an example?
- Or
- (b) Explain the Insertion and deletion operations on the Binary Search Tree and Explain the properties and applications of binary search trees?
12. (a) Write an algorithm for BFS and DFS? Trace with an example?
- Or
- (b) What is Minimum Spanning Tree? Explain Prim's algorithm and trace with an example?
13. (a) Sort the following numbers using insertion sort 45, 34, 12, 46, 27, 56, 11,87, 6, 33,28
- (b) Write an algorithm for heap sort and also analyze the time complexity.
- Or
- (c) Explain and Write an algorithm for Merge Sorting?
- (d) Sort the elements using Merge Sort: 52, 38, 81, 22, 48, 13, 69, 93, 14,45,58,79,72.
-