

III Semester B.A./B.Sc. Examination, November/December 2017
(Semester Scheme) (Repeaters) (14-15 Only)
COMPUTER SCIENCE - III
Data Structure and Algorithms

Time : 3 Hours

Max. Marks : 70

Instruction : Answer all Sections.

SECTION - A

I. Answer any ten questions. Each question carries 2 marks. (10×2=20)

- 1) Define linear data structure.
- 2) List out all the common operations of data structure.
- 3) Define space complexity of an algorithm.
- 4) What is recursion ?
- 5) Mention any 2 difference between binary search and linear search.
- 6) Define linked list.
- 7) What is pattern matching ?
- 8) What is the main disadvantage of a linear Queue ?
- 9) How a stack is represented in memory ?
- 10) Define Indegree and outdegree of a vertex in Graph.
- 11) What are directed graphs ? Give example.
- 12) Define a complete binary tree.

SECTION - B

II. Answer the following. Each question carries 10 marks. (5×10=50)

- 13) a) Write a program in C to implement any two string operations. 10

OR

- b) Write an algorithm to insert and delete an element in a queue. 10



- 14) a) Describe the Row-major and column major order of an array representation in memory. 10
- OR
- b) Explain binary search technique. Write a program to implement binary search. 10
- 15) a) Write an algorithm to implement stack operations. 10
- OR
- b) i) Name the advantages and disadvantages of linked list. 5
ii) Write a note on doubly linked list. 5
- 16) a) i) Write an algorithm to insert an element into a circular Queue. 6
ii) What are the applications of Queue. 4
- OR
- b) i) Explain pre-order traversal of binary tree. 5
ii) How a graph is represented in the memory? 5
- 17) a) Write a note on :
i) Applications of stack. 5
ii) Priority Queue. 5
- OR
- b) i) Write a algorithm to create binary tree. 5
ii) Explain the traversal of a graph using Breadth first search method. 5
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