

B.Sc. - II (CBCS Pattern) Semester-IV
USCST07 - Computer Science Paper-I - Algorithm & Data Structures

P. Pages : 2

Time : Three Hours



GUG/S/25/12002

Max. Marks :50

- Notes :
1. All questions are compulsory and carry equal marks.
 2. Draw neat and labelled diagram wherever necessary.
 3. Avoid vague answer and write specific answer related to questions.

Either:

1. a) Convert following infix expression into prefix and postfix expression. 5
- i) $A + (B^D) / (E - F) + G$
- ii) $((A + C(B^C) - D))$
- b) Explain the concept of Stacks with examples. 5

OR

- c) Write an algorithm to swap odd indexed elements with even indexed elements. 5
Original Array: A \rightarrow 10 20 30 40 50 60
After swapping: A \rightarrow 20 10 40 30 60 50
- d) Write an algorithm for insertion sort method. 5

Either:

2. a) Define queue. Explain representation of queue with suitable example. 5
- b) Write an algorithm to generate the Fibonacci series using recursion. 5

OR

- c) What are the types of queue? Explain anyone of them. 5
- d) Write an algorithm to find power of a number using recursion. 5

Either:

3. a) Write an algorithm to traverse Linked list. 5
- b) Explain two way linked list in brief. Also give its advantages. 5

OR

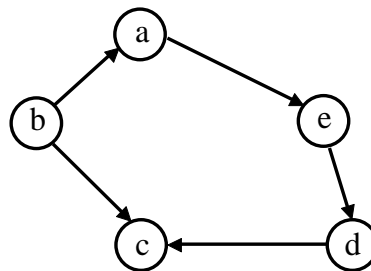
- c) What do you mean by linked list? Explain its memory representation with example. 5
- d) Write an algorithm to delete an element from linked list. 5

Either:

4. a) What is spanning tree? Explain minimum spanning tree with example. 5
- b) Write Depth-first search algorithm. 5

OR

- c) Explain 5
- i) Degree of Node ii) Directed graph.
- d) Find the indegree and outdegree of the following graph 5



5. All are compulsory.
- a) List various operations on Data structures. 2½
- b) Explain recursion properties. 2½
- c) List the operation on Linked list. 2½
- d) Draw the binary tree $A+(B*C)$. 2½
