

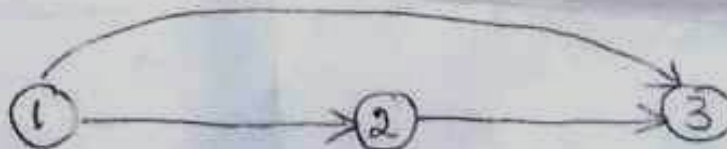
Code No. 3077

FACULTY OF SCIENCE
B.Sc. III-Semester (CBCS) Examination, November / December 2018**Subject : Computer Science****Paper – III : Data Structures (DSC)****Max. Marks: 80****Time : 3 Hours****PART – A (5 x 4 = 20 Marks)**
(Short Answer Type)**Note : Answer any FIVE of the following questions.**

- 1 What is the difference between Atomic and Composite data with examples?
- 2 What is Sequential Organization? Briefly explain its advantages and disadvantages.
- 3 Explain the use of Stack to find the factorial of a number using recursion.
- 4 What are the demerits of recursion?
- 5 Construct a binary tree using the following two traversals.

Inorder	D	B	H	E	A	I	F	J	C	G
Preorder	A	B	D	E	H	C	F	I	J	G

- 6 Explain how to represent the following graph using Inverse Adjacency List.



- 7 What are the Pros of binary search?
 - 8 Define minheap and maxheap with examples.
- PART – B (4 x 15 = 60 Marks)**
(Essay Answer Type)
Note: Answer ALL questions.
- 9 (a) Define ADT for the "Integer" and explain all its functions and axioms in detail.

OR

- (b) Write a C++ program to implement the following operations on Arrays.
 - (i) To insert an element at a given position
 - (ii) To delete an element at a given position

Code No. 3077

..2..

10 (a) Explain the representation of stack using a linked list.

OR

(b) Explain the operations of inserting a node, deleting a node, and traversal in a circular linked list with examples.

11 (a) Write the algorithm for the construction of Expression Tree. Explain the steps to construct an expression tree for the expression
 $E = (a + b \times c) / d$.

OR

(b) Explain the representation of graphs using the adjacency matrix, adjacency list, and adjacency multi-list.

12 (a) Write a C++ program for insertion sort. Show the steps of the insertion algorithm for the list of data.
76, 67, 36, 55, 23, 14, 6

OR

(b) Explain the step-by-step procedure to construct a heap tree using the list of keys.
8, 20, 9, 4, 15, 10, 7, 22, 3, 12
