

**B.Tech. – VIEP – COMPUTER SCIENCE AND
ENGINEERING (BTCSVI)**

Term-End Examination

00327

December, 2017

BICS-007 : DATA STRUCTURES

Time : 3 hours

Maximum Marks : 70

Note : Answer any **five** questions. All questions carry equal marks.

1. (a) What is Space Matrix ? Describe with suitable examples. 7
- (b) Write a 'C' function to insert an element in a circular linked list. 7
2. (a) Write an algorithm for breadth first search traversal of a graph. 7
- (b) Write a 'C' function to insert an element in the beginning of a doubly linked list. 7
3. (a) A binary tree has nine nodes. The inorder and preorder traversals yield the following sequences of nodes : 7

Inorder :	E	A	C	K	F	H	D	B	G
Preorder :	F	A	E	K	C	D	H	G	B

- (b) Explain Queues with examples. Write down the algorithm for insertion and deletion in a queue using circular array. 7
4. (a) What are the different searching techniques ? Explain one of them with suitable example. 7
- (b) Sort the following data using Quick Sort : 7
44, 33, 11, 55, 77, 90, 40, 60, 99, 22, 88, 66
5. (a) Explain Quick Sort with a suitable example. 7
- (b) Explain Binary Search. Write the algorithm for binary search and also find its complexity. 7
6. (a) Write a function in 'C' to perform PUSH and POP operations in a stack implemented using an array. 7
- (b) Write a program to implement Bubble Sort. 7
7. Write short notes on any **two** of the following : $2 \times 7 = 14$
- (a) Circular Sequence
- (b) Stack Overflow and Underflow
- (c) Planar Graph
- (d) Algorithm