

**DIPLOMA - VIEP - COMPUTER SCIENCE AND
ENGINEERING (DCSVI) / ADVANCED
LEVEL CERTIFICATE COURSE IN COMPUTER
SCIENCE AND ENGINEERING (ACCSVI)**

00144

Term-End Examination

June, 2017

OICS-001 : DATA STRUCTURES AND FILES

Time : 2 hours

Maximum Marks : 70

Note : Question no. 1 is **compulsory**. Attempt any **four** questions from the remaining.

1. Choose the correct answer from the given alternatives.

$7 \times 2 = 14$

- (a) The complexity of multiplying two matrices of order $m \times n$ and $n \times p$ is
- (i) mnp
 - (ii) mp
 - (iii) mn
 - (iv) np
- (b) The postfix form of the expression $(A + B) * (C * D - E) * F / G$ is
- (i) $AB + CD * E - FG / **$
 - (ii) $AB + CD * E - F ** G /$
 - (iii) $AB + CD * E - * F * G /$
 - (iv) $AB + CDE * - * F * G /$

- (c) The searching technique that takes $O(1)$ time to find a data is
- (i) Linear search
 - (ii) Binary search
 - (iii) Primitive data types
 - (iv) Hashing
- (d) $O(N)$ (linear time) is better than $O(1)$ constant.
- (i) True
 - (ii) False
- (e) What is the maximum possible number of nodes in a binary tree at level 6 ?
- (i) 64
 - (ii) 32
 - (iii) 128
 - (iv) 6
- (f) The extra key inserted at the end of the array is called a/an
- (i) End Key
 - (ii) Stop Key
 - (iii) Sentinel
 - (iv) Transposition

(g) What is the result of the following operation Top (Push (S, X))

- (i) X
- (ii) null
- (iii) S
- (iv) None of these

2. Explain the following with the help of an example : 7+7

- (i) Singly Linked List
- (ii) Doubly Linked List

3. Briefly explain the operations of queue with the help of examples. 14

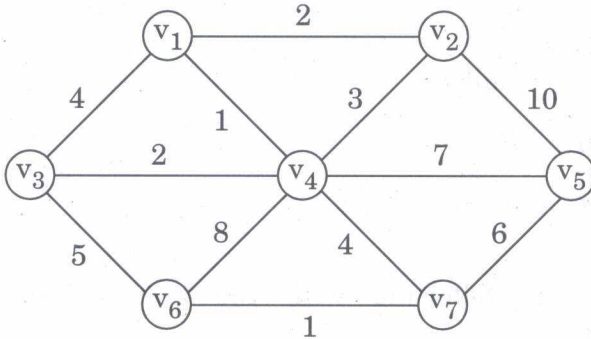
4. (a) Insert the following elements step by step, in sequence into an empty AVL tree : 7

15, 18, 20, 21, 28, 23, 30, 26

(b) What is a binary search tree ? Explain with the help of an example. 7

5. Write a function to insert a node into a binary search tree and explain with the help of an example. 14

6. Explain Prim's algorithm and perform the same for the following graph : 14



7. Explain two searching techniques with the help of an example program. 14

8. What is bubble sort ? Perform bubble sort for the following elements : 14

19, 1, 9, 7, 3, 10, 13, 15, 8, 12.
