Roll No.						

Total No. of Pages : 02

Total No. of Questions : 09

B.Voc. (Software Development) (Sem.-2) DATA STRUCTURES Subject Code : 5.GV.05 M.Code : 77037 Date of Examination : 20-12-22

Time: 3 Hrs.

Max. Marks : 30

INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
- 2. SECTION-B contains FIVE questions carrying $2^{1}/_{2}$ (Two and Half) marks each and students has to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying FIVE marks each and students has to attempt any TWO questions.

SECTION-A

- 1. a) Explain the concept of collision resolution in a heap.
 - b) What is the working principle of Quicksort?
 - c) What are the graph traversal techniques? Briefly explain.
 - d) What is a threaded binary tree?
 - e) What is the main advantage of a circular queue?
 - f) What are weighed graphs?
 - g) What is a pseudocode?
 - h) How you can delete a node from an existing binary tree.
 - i) Distinguish between Linear and Binary search techniques.
 - j) Write advantages and disadvantages of doubly linked list over singly linked list.

SECTION-B

- 2. What are the steps involved in the programming development life cycle? Explain in detail.
- 3. The order of nodes of a binary tree in Pre-order and In-order traversal are as under : Preorder : A B D G H C E F I K J In-order : B G H D A E I C K F J.

Draw the corresponding binary tree.

4. Show the bubble sort steps for the following numbers.

25 10 72 18 40 11 32 9

- 5. Can a graph be represented using an array? Is yes, then give examples.
- 6. Write a recursive algorithm for Preorder and Post order traversals of a binary tree.

SECTION-C

7. Write algorithm to convert given infix expression to postfix expression. Use your algorithm to convert following infix expression to postfix.

$$p + (u * z - (a / b \uparrow q) * m) * y$$

- 8. What is the copcept of Hashing? Explain various techniques used for hashing. How collisions are handled while addressing?
- 9. A queue Q contains the items a_1 , a_2 ,.., a_n in order with a_1 at the front and a_n at the back. It is required to transfer these items into a stack S so that a_1 is at the top of the stack and the order of all these items is preserved using operations of queues and stack, outline the algorithm to accomplish the task.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.