Date:27-10-2018                 Dept. No.                      Max. : 100 Marks

Time:01:00-04:00

## PART – A

**Answer all Questions:**                                      **10 x 2 = 20**

1. Differentiate procedure oriented language and object oriented language.

2. Define pointers. State the use of '&' and '*' operators.

3.  Mention the features of friend function.

4. What is inheritance? Mention its types.

5. Define stack. What are the applications of stack?

6. What is searching? State the logic in binary search.

7. What are threaded binary trees? Give example.

8. State the constraints in Red Black trees.

9. Define graph. Mention the ways of representing a graph.

10. What is minimum spanning tree?

## PART – B

**Answer all Questions:**                                      **5 x 8 = 40**

11.a.  Write short notes on the basic concepts of OOP's.

(OR)

b.  Explain the operators used in C++.

12.a.  Define constructor.Explain  the categories of constructors.

(OR)

b. Explain the exception handling mechanism. Write the syntax to catch multiple and all

exceptions.

13.a. Define list. Illustrate the following with a single linked list.

i. insertion at the beginning

ii. insertion at the middle.

iii. insertion at the end.

(OR)

b. Perform the following sorting for the given data.

2345,  8793, 7650, 5466, 4789, 6954, 3141, 9109, 4192, 3841, 7112,1110.

i. Radix sort

ii.Selection sort.

14.a. Discuss the following

       i. reconstruction of the binary tree using the following notations

       INFIX notation :  D  G  B  H  E  A  F  I  C

       PREFIX notation: A  B  D  G  E  H  C  F  I
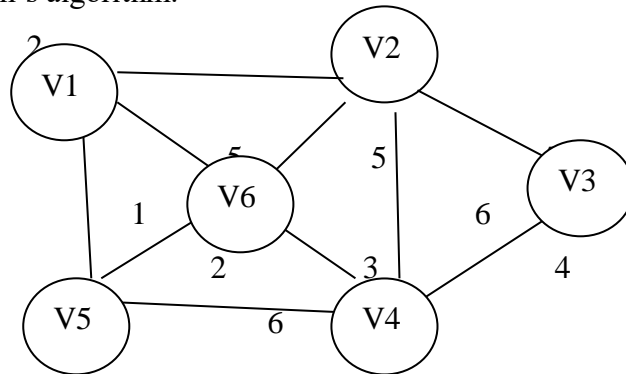
<div align="center">(OR)</div>

  b. Explain in detail the Hash functions with examples.

15.a. Construct minimum spanning tree for the graph using the following algorithms

       i. Kruskal's algorithm

       ii. Prim's algorithm.



<div align="center">(OR)</div>

  b. Explain the types of graph with example.


<div align="center"><strong>PART – C</strong></div>

**Answer any TWO Questions:**                    **2 X 20 = 40**

16.a. Explain the following with examples

       i. any two branching statements

       ii.any two looping statements.

  b. Illustrate the categories of function with example.

17.a. Discuss the  following queue operations with example

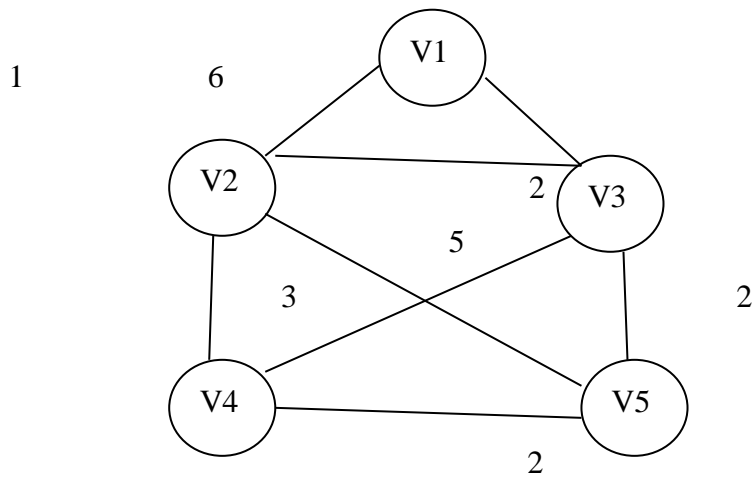  (check boundary conditions)

       i. insertion.

       ii.deletion.

  b. Perform the  insertion operation  in B tree using the following data

       C,I,H,D,M,F,J,O,L,G,U,K,T,Z,E,N,P,V,W,R


18.a. Find the shortest path for the given graph using dijkstra's shortest path algorithm.

1        6

V2

V1

2   V3

5

3

2

V4

V5

2

b. What are AVL trees? Illustrate rotations for the following cases.

      i. Left to Right rotation.

      ii. Right to Left rotation.