

Total No. of Questions : 8]

SEAT No. :

P-1532

[Total No. of Pages : 3

[6002]-161

S.E. (Computer/AI & DS)

DATA STRUCTURES AND ALGORITHMS

(2019 Pattern) (Semester - IV) (210252)

Time : 2½ Hours]

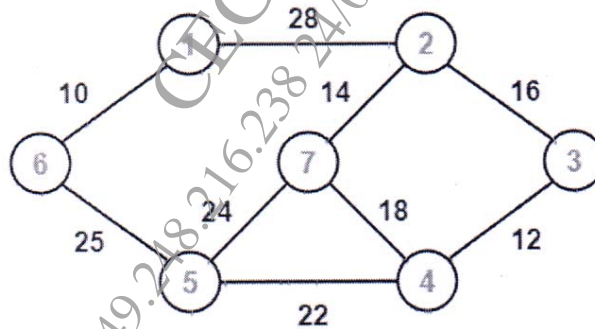
[Max. Marks : 70

Instructions to the candidates:

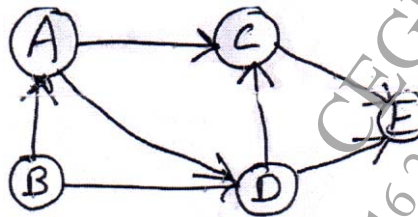
- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Assume suitable data, if necessary.
- 3) Draw neat labelled diagram wherever necessary.
- 4) Figures to the right indicate full marks.

Q1) a) Write an algorithm for depth first traversal of a graph. [6]

- b) Construct the minimum spanning tree (MST) for the given graph using Prim's Algorithm starting from vertex 6. [6]



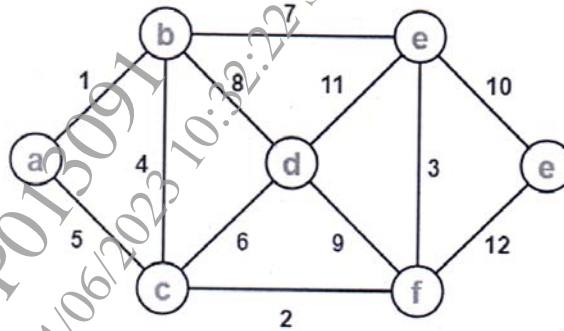
- c) What is topological sorting? Find topological sorting of given graph. [6]



OR

P.T.O.

- Q2)** a) Write an algorithm for breadth first traversal of a graph. [6]  
 b) Using Prim's Algorithm, find the cost of minimum spanning tree (MST) of the given graph starting from vertex 'a' - [6]



- c) Define the following terms : [6]  
 i) Complete Graph  
 ii) Connected Graph  
 iii) Subgraph

- Q3)** a) Construct an AVL Tree by inserting numbers from 1 to 8. [6]  
 b) Define Red Black tree. List its properties. Give example of it. [6]  
 c) Write functions for RR and RL rotation with respect to AVL tree. [6]

OR

- Q4)** a) Construct an AVL Tree for following data : [6]  
 50, 25, 10, 5, 7, 3, 30, 20, 8, 15  
 b) Explain with example K dimensional tree. [6]  
 c) Explain static and dynamic tree tables with suitable example. [6]

- Q5)** a) Construct a B-Tree of order 3 by inserting numbers from 1 to 10. [9]  
 b) Explain following primary index, Secondary index, Sparse index and Dense index with example. [8]

OR

- Q6)** a) Construct a B Tree of order 5 with the following data : [9]  
 D H Z K B P Q E A S W T C L N Y M  
 b) What is trie tree? Explain insert and search operation on it. [8]

- Q7)** a) Explain multilist files & coral rings. [9]  
b) What is Sequential and index sequential file organization? State its advantages and disadvantages. [8]

OR

- Q8)** a) Explain inverted file & cellular partitions. [9]  
b) Explain direct access file organization. State its advantages and disadvantages. [8]

