

Total No. of Questions : 8]

SEAT No. :

PD-4066

[Total No. of Pages : 3

[6402]-25

S.E. (E & TC/Electronics)

DATA STRUCTURES

(2019 Pattern) (Semester - III) (204184)

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) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Use of Calculator is allowed.
- 5) Assume Suitable data if necessary.

Q1) a) Compare Stack and Queue. What are the advantages of circular queue over liner queue? [6]

b) Write a function PUSH and POP in 'C' for stack using linked list. [6]

c) Write a short note on circular queue. Compare it with linear queue. [5]

OR

Q2) a) What are the applications of Queue? Explain two applications in detail. [5]

b) Convert the following prefix expression into infix form. Show all the steps and stack contents:

*-A/BC-/AKL [6]

c) Write ADD and DELETE function in 'C' for Queue using array. [6]

Q3) a) Compare array and linked list. [5]

b) Write a 'C' function to delete a number from singly linked list. [6]

c) Differentiate singly linked list and doubly linked list. [6]

OR

P.T.O.

- Q4)** a) Draw and explain circular linked list. State the limitations of single linked list. [5]
- b) Write a 'C' function to insert a number at end in to the singly linked list. [6]
- c) Explain doubly linked list (DLL). What are the advantages of DLL over SLL. [6]

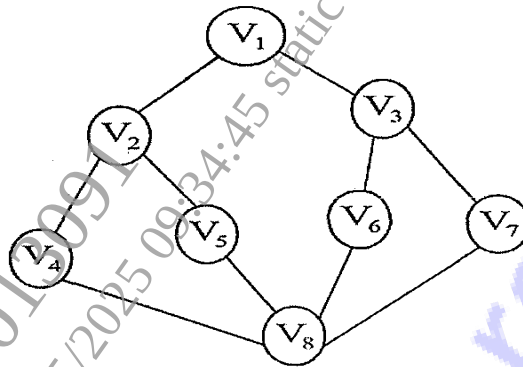
- Q5)** a) Construct Binary search tree for the following
MAR, OCT, JAN, APR, NOV, FEB, MAY, DEC, JUN, AUG, JUL, SEP [6]
- b) Write a pseudo code to search an element in binary search tree using arrays. [6]
- c) Define binary tree. Name and explain with suitable example the following terms [6]
- i) Root node
 - ii) Left sub tree and right sub tree
 - iii) Depth of tree

OR

- Q6)** a) Define BST? Create a BST for the following data: [6]
14,15,4,9,7,18,3,5,7
- b) Explain with suitable example how binary tree can be represented using: [6]
- i) Array
 - ii) Linked List
- c) Construct the binary search tree from the following elements: [6]
15,4,16,8,2,18,14

Also show preorder, inorder and postorder traversal for the same.

Q7) a) Draw adjacency list and adjacency matrix for the following graph: [6]

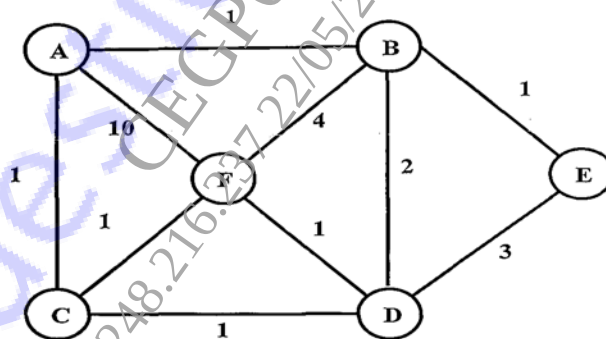


b) What is MST? Explain with suitable example Kruskal's Algorithm to find out MST. [6]

c) Define DFS and BFS graph with example. [6]

OR

Q8) a) Explain Kruskal algorithm? Find the minimum spanning tree for below figure. Using Kruskal's Algorithm. [6]



b) Explain Dijkstra's algorithm with example. [6]

c) Explain with suitable example the techniques to represent a Graph. [6]

Note: consider graph of minimum 6 vertices

