Total No. of Questions : 5]

SEAT No. :

PE1505

[Total No. of Pages : 3

[6502]-401

S.Y.B.Sc. (Computer Science)

CS - 241 : DATA STRUCTURES AND ALGORITHMS - II

(Revised 2019 Pattern) (CBCS) (Semester - IV) (24121)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to right indicates full marks.***
4) ***Your answers will be values as a whole.***

Q1) Answer any Eight of the following. **[8×1=8]**

a) What is undirected graph?

b) What is cycle?

c) Define topological ordering.

d) List the binary tree traversal methods.

e) What is internal node?

f) What is sibling?

g) What is synonym.

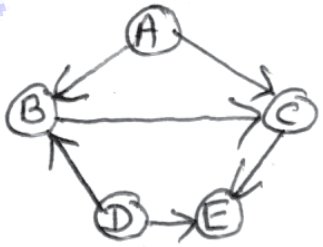
h) Define tombstone.

i) What is multiway search tree?

j) What is height balanced tree?

Q2) Attempt any Four of the following. **[4×2=8]**

a) Give in degree, out degree and out degree for each vertex in given graph.



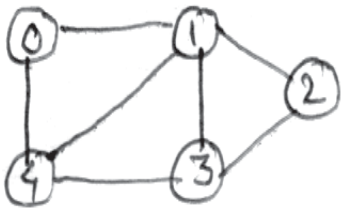
b) Write a short note on linear probing.

P.T.O.

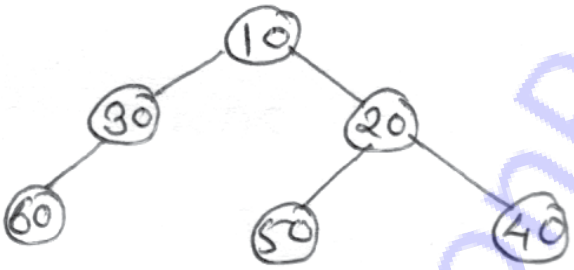
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c) Give any two difference between B tree and B+ tree.

d) Give adjacency matrix for given graph.



e) Give the mirror tree of following tree.



Q3) Attempt any two of the following : **[2×4=8]**

a) Write a C function to insert node in Binary Search Tree.

b) Write a C function to insert element in hash table. Give proper message if collision occurs.

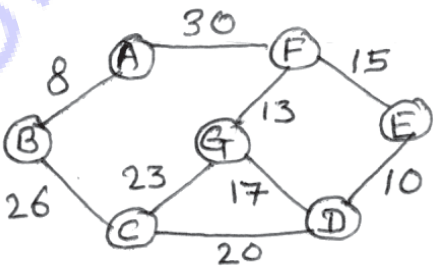
c) Write a C program that accepts the vertices and edges of a graph and store it as an adjacency matrix.

Q4) Attempt any two of the following : **[2×4=8]**

a) Explain the preorder traversal with the help of suitable example.

b) Build the AVL tree for Sun, Mon, Fri, Thur, Wed

c) Construct the minimum spanning tree (MST) for the given graph using Kruskal's algorithm.

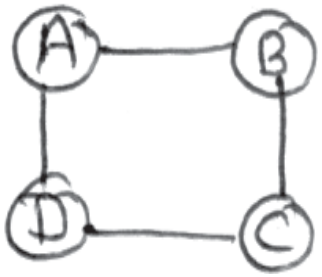


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Q5) Attempt any one of the following : **[1×3=3]**

a) Construct a Red Black Tree for given data:2, 1, 4, 5, 9, 3

b) Give possible Spanning trees that can be created from the given graph.



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