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S.E. (Computer) (Second Semester) EXAMINATION, 2019

ADVANCED DATA STRUCTURES

(2015 PATTERN)

Time : 2 Hours

Maximum Marks : 50

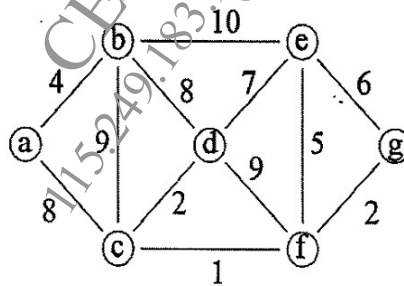
N.B:-

- (i) Answer four questions
- (ii) Draw neat diagrams wherever necessary
- (iii) Figures to the right indicates full marks
- (iv) Assume suitable data, if necessary

- 1 a Generate binary tree for the following pre-order and in-order traversals: 6

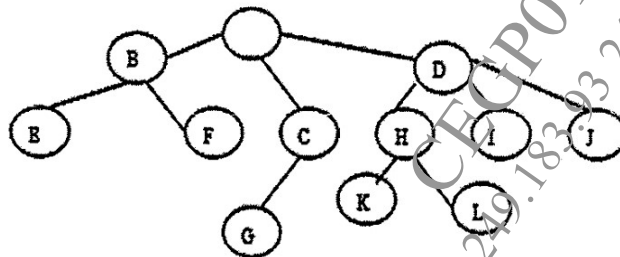
Inorder : E A C K F H D B G  
Preorder : F A E K C D H G B

- 1 b Construct MST from the given data using Prims Algorithm. 6



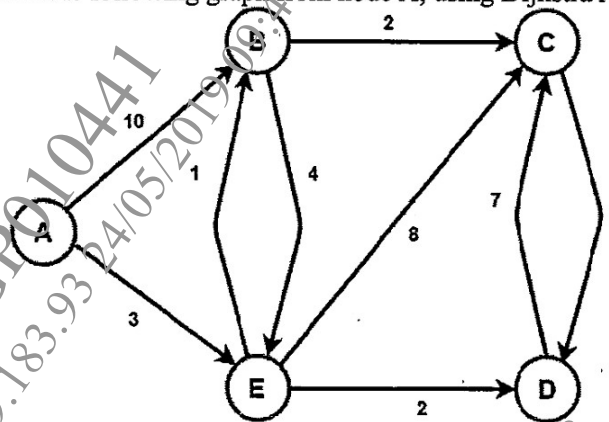
OR

- 2 a Convert the given general tree to its equivalent binary tree. 6



P.T.O.

- 2 b Find the shortest path in the following graph from node A, using Dijkstra Algorithm. 6



- 3 a Construct AVL tree for following sequence of keys  
MAR, MAY, NOV, AUG, APR, JAN, DEC, JULY 6
- 3 b For the given set of values 35, 36, 25, 47, 2501, 129, 65, 29, 16, 14, 99. Create a hash table with size 15 and resolve collision using open addressing techniques. 6

OR

- 4 a Find the Optimal Binary Search Tree for the given data using Dynamic Programming approach. Explain the solution stepwise. 6

Index	0	1	2	3
Data	10	20	30	40
Frequency	4	2	6	3

- 4 b What is hash function? What are different characteristics of good hash function? Explain six different types of hash function? 6

- 5 a Insert the following keys to a 5-way B tree  
A G F B K D H M J E S I R X C L N T U P 8

- 5 b Explain with example  
i. Red Black Tree 6  
ii. Trie Tree

OR

- 6 a What is B+ tree? Construct a B+ tree of order 4 for the following data.  
1, 4, 7, 10, 17, 21, 31, 25, 19, 20, 28, 42 8

- 6 b Explain with example  
i. KD Tree 6  
ii. Splay Tree

7 a Describe Indexed Sequential Access file organization method in detail. Also state the advantages and disadvantages. 6

7 b Write pseudocode for two-way merge sort. 6

OR

8 a Describe Sequential Access file organization method in detail. Also state the advantages and disadvantages. 6

8 b What is Linked Organization? Describe inverted Files and cellular partitions w. r. t. Linked organization. 6