Oct-2014

कदंब - 001

0345

COMPUTER SCIENCE PAPER - I : UG-CS-241
Data Structure - II
(New) (24245)

P. Pages : 3

Time : Two Hours **Max. Marks : 40**

Instructions to Candidates :
1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory.
5. Figures to the right indicate full marks.

1. Attempt **any eight.** 8

a) Number of nodes in a complete binary tree of depth 'K' is

i) 2^K ii) 2K

iii) 2K - 1 iv) None of these.

b) Hashing takes key as input and gives ------- of keys as output.

i) value ii) data

iii) Address iv) None.

c) Sort in which, file is divided into subfiles which are to be independently sorted and then merged.

i) quick sort ii) heap sort

iii) Bubble sort iv) None.

d) A vertex with degree one in a graph is called

i) leaf ii) Pendant vertex

iii) End vertex iv) Null vertex.

e) Which traversal method uses queue to hold nodes that are waiting to be processed :

i) Breadth first ii) Depth first

iii) D - Search iv) Inorder.

f) Other name for insertion sort is

i) BFS sort ii) Shuttle sort

iii) Insulin sort iv) Jackpot sort.

g) Maximum possible height of an AVL Tree with 7 node is -

i) 3 ii) 4

iii) 5 iv) 6.

h) The maximum number of nodes in a binary tree of depth 5 is --

i) 31 ii) 16

iii) 32 iv) 15.

i) A binary search tree contains the values 1, 2, 3, 4, 5, 6, 7, 8. The tree is traversed in pre - order and the values are printed out which of the following is valid output.

i) 5 3 1 2 4 7 8 6 ii) 5 3 1 2 6 4 8 7

iii) 5 3 2 4 1 6 7 8 iv) 5 3 1 2 4 7 6 8

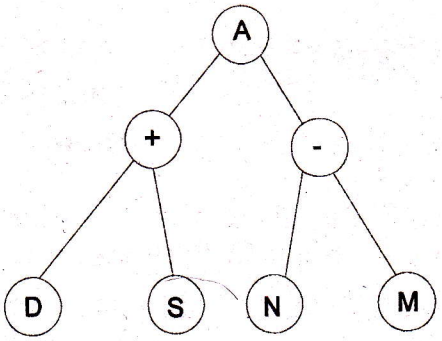
j) Adjacency matrix of a digraph is -

i) Identity matrix ii) Symmetric matrix

iii) Asymmetric matrix iv) None of these.

2. Attempt **any four.** 8

a) Find Inorder and Postorder traversal of tree.



b) Define strictly binary tree.

c) What is overflow? List overflow handling techniques in hash table.

d) Enlist applications of Graph.

e) Define - i) Internal sort ii) External sort.

f) Explain mid square hash function.

3. Attempt **any two.** 8

a) Write an algorithm for selection sort.

b) Define binary search tree. Create binary search tree for following data 5, 8, 3, 7, 9, 2, 1, 12, Root node is 6 check whether above tree AVL tree or not.

c) Write short note on 'Adjacency List' representation of graph.

4. a) Attempt **any two.** 6

a) Explain sequential storage representation of binary tree.

b) Write a note on Linear probing.

c) Differentiate linear search and Binary search.

b) Write node structure of Adjacency multilist. 2

5. Attempt **any one.** 8

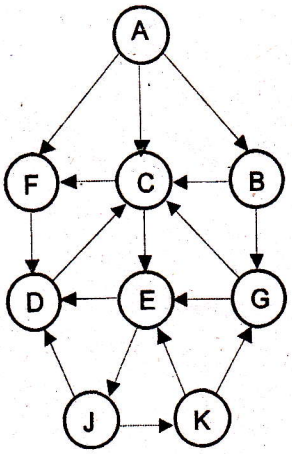
a) i) Write an algorithm for sorting an elements in an array using insertion sort.

ii) Sort following data using quick sort.

19, 72, 81, 77, 75, 12, 5, 88

b) i) Discuss BFS method of graph traversing.

ii) Traverse the following graph using BFS technique Trace all steps - from A to J.



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