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[4857]-1088**S.E. (Information Technology) (Second Semester)****EXAMINATION, 2015****DATA STRUCTURES AND FILES****(2012 PATTERN)****Time : Two Hours****Maximum Marks : 50****N.B. :—** (i) Answer *four* questions.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Assume suitable data, if necessary.

1. (a) Transform the following expression to prefix and postfix : [6]

$$A + (((B - C) * (D - E) + F)/G) \$ (H - J)$$

Here consider \$ as a raised to operator.

(b) What is the priority queue ? What is its use ? Write a pseudo code for the function to add an element in the priority queue. [6]

*Or***2. (a)** What is Stack ? Write a program for implementation of stack using linked organization and perform the following operation :

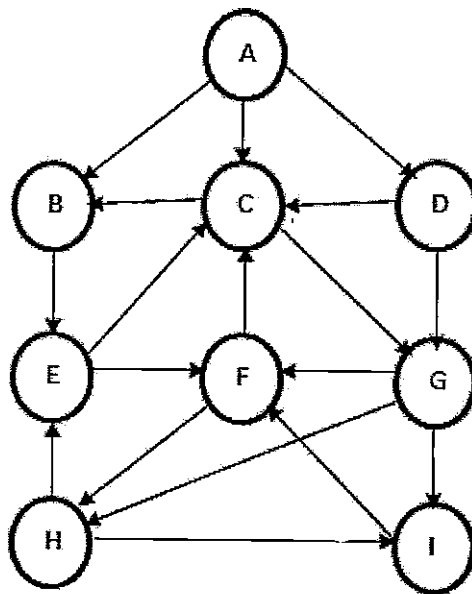
(i) PUSH

(ii) POP.

[6]

P.T.O.

- (b) Explain the concept of multi-queue and double ended queue with example. [6]
3. (a) Write a c function for inorder and preorder traversal of an inorder threaded binary tree. [6]
- (b) Consider the graph G given in figure below. Draw the adjacency list of G is also given. Assume that G represents the daily flights between different cities and we want to fly from city A to H with minimum stops. Find the minimum path P from A to H given that every edge has length of 1. [6]



Or

4. (a) A binary tree is stored in the memory of a computer as shown below. Trace the structure of the binary tree and write

the INORDER, PREORDER, POSTORDER traversal of the same : [6]

Node Number	Lchild	Data	Rchild
1	2	844	6
2	0	796	0
3	0	110	0
4	0	565	9
5	12	444	0
6	10	116	0
7	4	123	1
8	0	444	0
9	8	767	3
10	0	344	0

Assume
Root : 7

(b) Write a pseudo code for Prim's algorithm. [6]

5. (a) Draw a Huffman's Tree for the given data set and find the corresponding Huffman Codes : [8]

Character	Weight
A	3
B	15
C	2
D	4
E	5
F	12
G	5

H	10
I	3
J	4
K	6
L	8
M	7
N	2

- (b) What are the characteristics of good hash function ? List out different techniques to resolve collision in a hash table. Explain any *one*. [6]

Or

6. (a) Obtain an AVL tree by inserting all months in a calendar year. Label the rotations at appropriate place. [10]
- (b) Create a max heap with the following elements : [4]
17 25 8 0 1 250 1008 65 48 101

7. (a) Write a pseudo C code for all primitive operations of index sequential file. [8]
- (b) Distinguish between logical and physical deletion of records and illustrate it with an example. [4]

Or

8. (a) What is File ? Explain different types of file organization [6]
- (b) Write a pseudo code to perform the following operations on Direct Access File : [6]
- (i) Insert
- (ii) Delete.