SE | IT | III CBGS 28|5|14

DSAA.

QP Code : **NP-18696**

(3 Hours) **[Total Marks : 80**

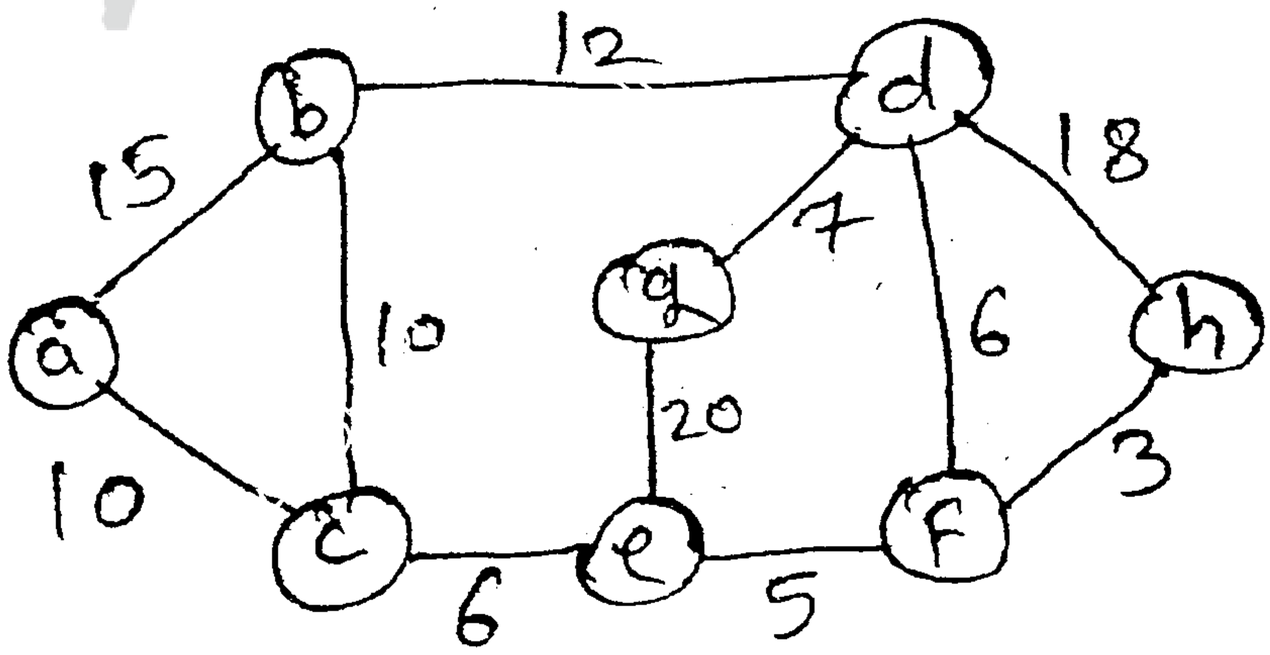
N. B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **three** from **remaining** questions.
(3) **Assume** suitable **data** if **necessary**.

1. (a) What is stack ? Give applications of it. **2**
(b) What is time complexity ? Determine time complexity of following code :- **3**

```
for (i=1; i<=n; i++)
for (j=1; j <=n; j++)
  x=x+1;
```

(c) Explain with e.g. :- **3**
(i) Complete binary tree
(ii) Degree of tree
(iii) Height of tree
(d) Explain linked list with its various types. **3**
(e) Define double ended queue and give its applications. **3**
(f) Define asymptotic notation along with example. **3**
(g) Define Graph. List its types with example. **3**

2. (a) Find the shortest path using Dijkstra's algorithm :- **10**



(b) Implement quick sort with example and find its complexity. **10**

3. (a) Explain BFS and DFS with algorithm and proper example. **10**
(b) What is linked list ? Write 'C' function for insertion of 'n' elements. **10**

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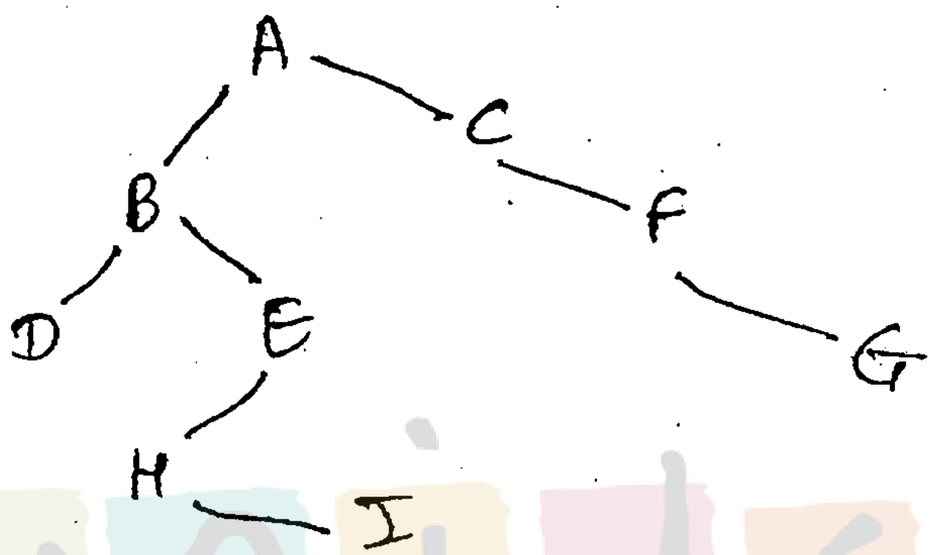
4. (a) Traverse the following binary tree into preorder, inorder, postorder by giving its algorithm. **10**



(b) Using Prim's algorithm find minimum spanning tree of a graph with example. Write algorithm of it. **10**

5. (a) What is priority queue ? Give implementation of it. **10**

(b) What is graph ? Give representation of graph with example. State applications of it. **10**

6. Solve any **four** :- **20**

(a) AUL Tree

(b) Euclids algorithm

(c) Sparse matrix

(d) B-Tree

(e) Circular linked list
