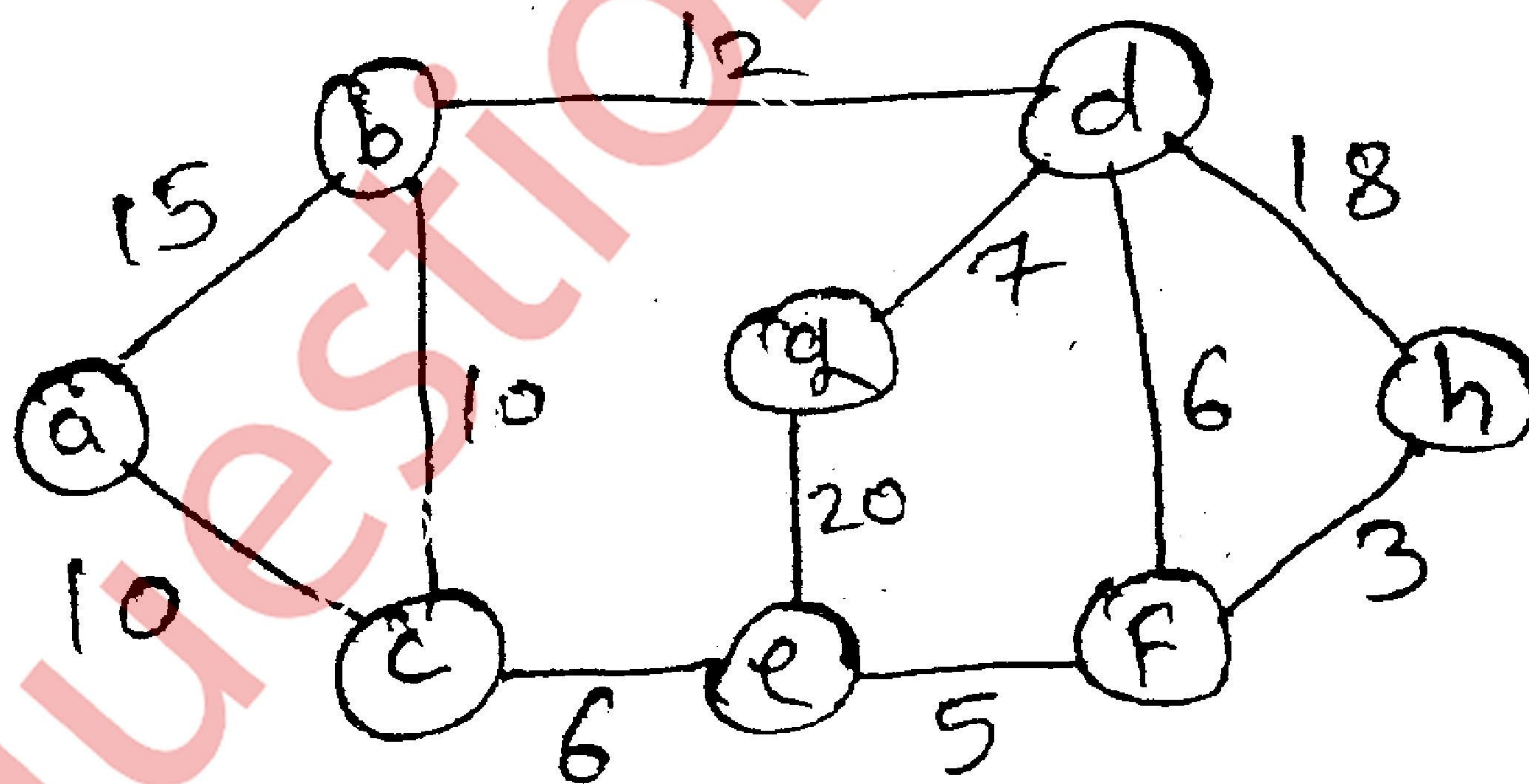


- N. B. : (1) Question No. 1 is compulsory.  
 (2) Attempt any **three** from **remaining** questions.  
 (3) Assume suitable data if necessary.

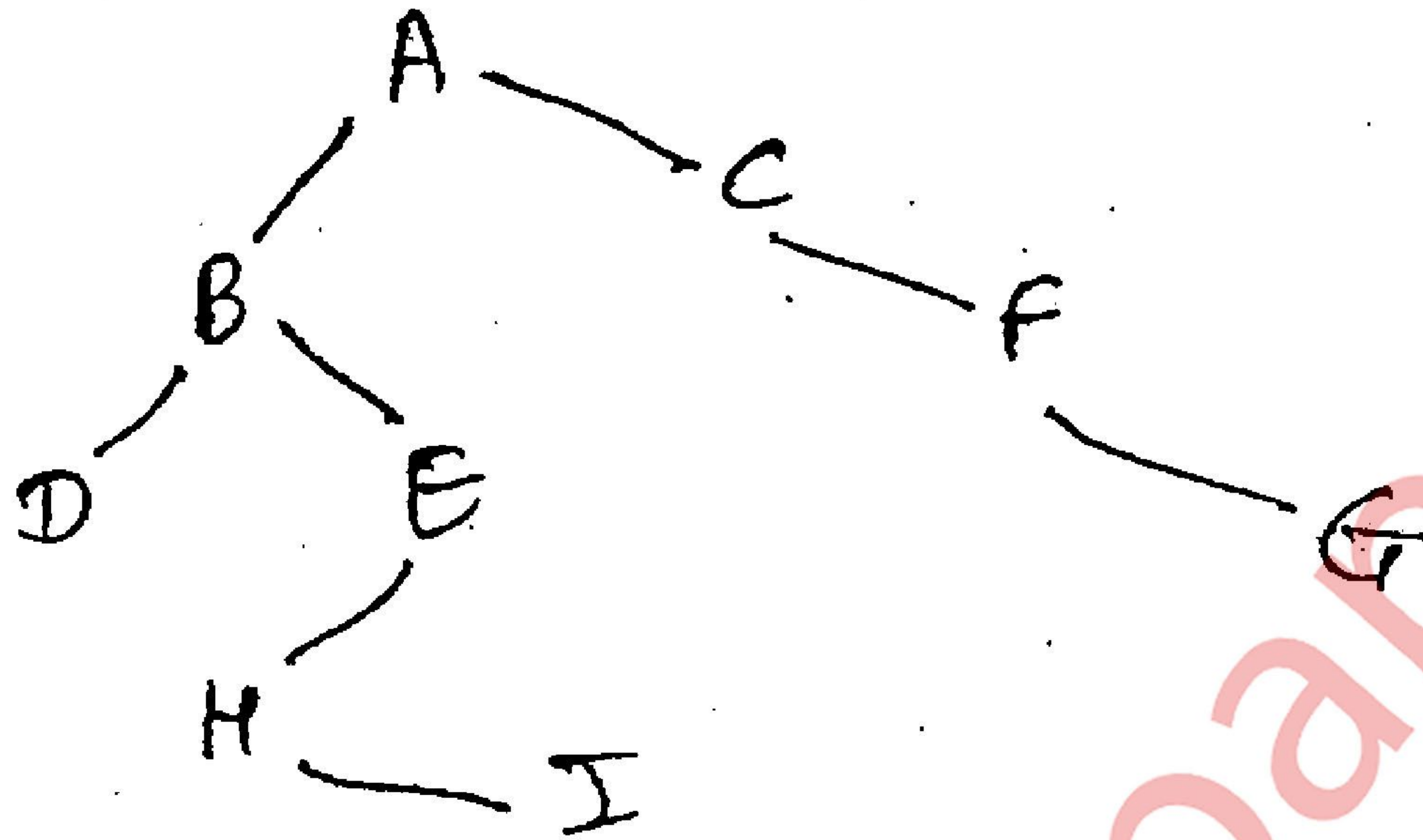
1. (a) What is stack ? Give applications of it. 2  
 (b) What is time complexity ? Determine time complexity of following code :- 3  
     for (i=1; i<=n; i++)  
     for (j=1; j <=n; j++)  
     x=x+1;  
 (c) Explain with e.g. :- 3  
     (i) Complete binary tree  
     (ii) Degree of tree  
     (iii) 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. 10  
Write algorithm of it.
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) AVL Tree
  - (b) Euclids algorithm
  - (c) Sparse matrix
  - (d) B-Tree
  - (e) Circular linked list
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