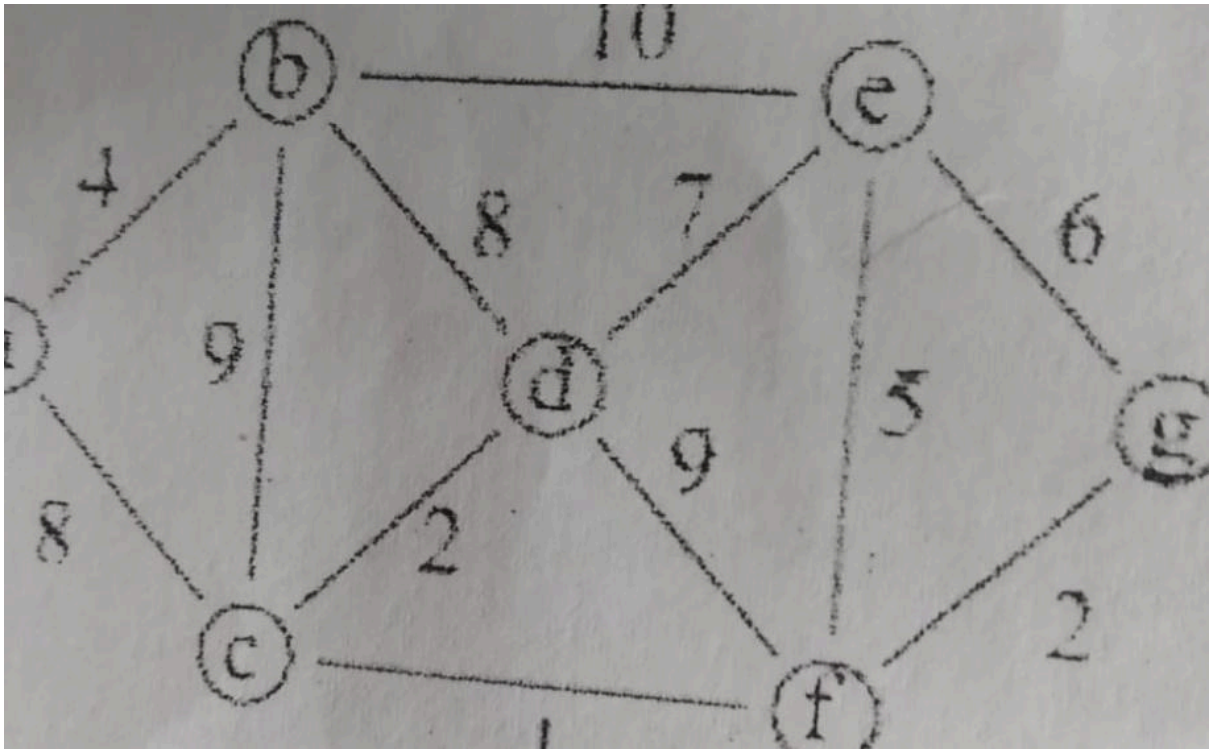
Sub : Discrete Mathematics **Class:-SYCSE**

1)Show the steps of constructing binary search tree for the following sequence of data items. Also write steps to search an element"25" in the resultant tree.32,56,47,28,30,45,15,72,25

2) Find the minimum spanning tree for the graph given below using prim's algorithm?



3) Show that tree with n vertices has n-1 edges.

4) Define following with respect to tree

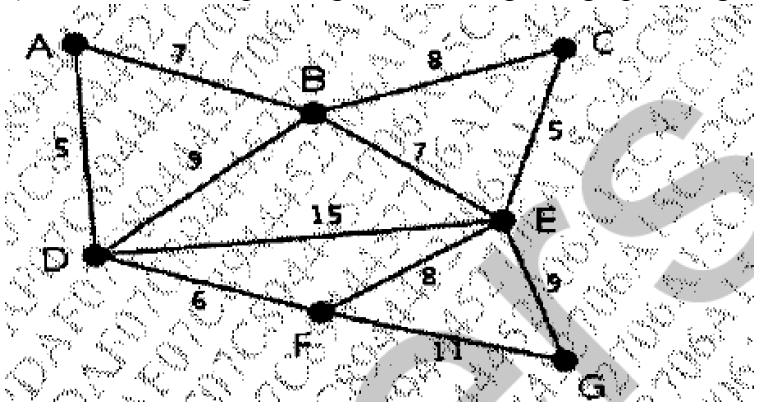
a)Minimum spanning tree

b)Eccentricity of vertex

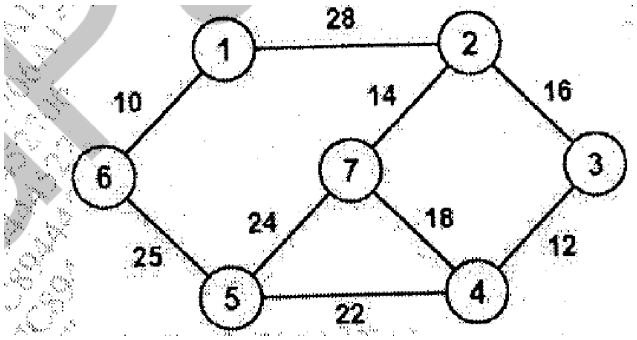
c)M-array tree

d)Level and Height of tree

5)Find Minimum spanning tree for the given graph using Prim's algorithm?

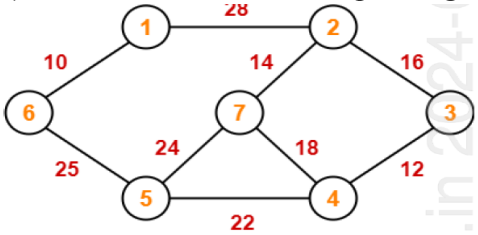


6) Find Minimum spanning tree for the given graph using Kruskal's algorithm?

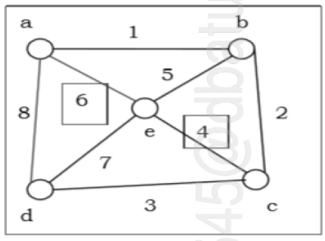


7)Explain Binary search tree with an example in detail.(Remember)

8) Construct the minimum spanning tree (MST) for the given graph using Prim's Algorithm.(apply)

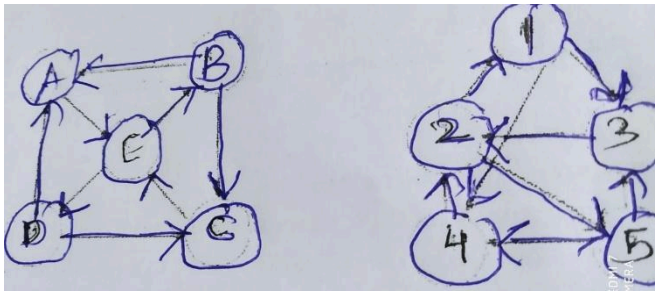


9) Prove that following graph is Hamiltonian or not by **Ore's Theorem**

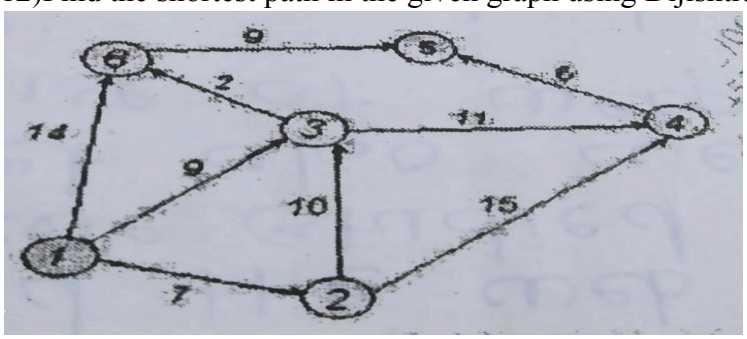


10)Define rooted tree, balanced tree, Binary search tree. Explain with examples.(understand)

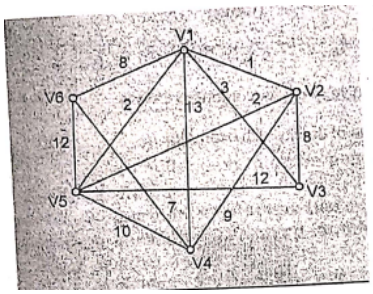
11)Show that following graphs are isomorphic .Also give correspondence between edges and vertices of two graphs.



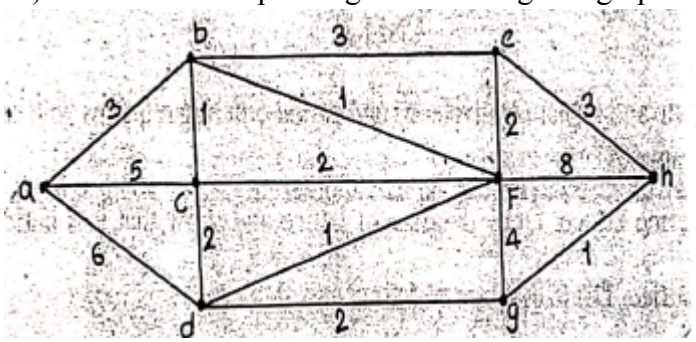
12)Find the shortest path in the given graph using Dijisktra's shortest path algorithm.



13)Find Minimum spanning tree for the given graph using Kruskal's algorithm?

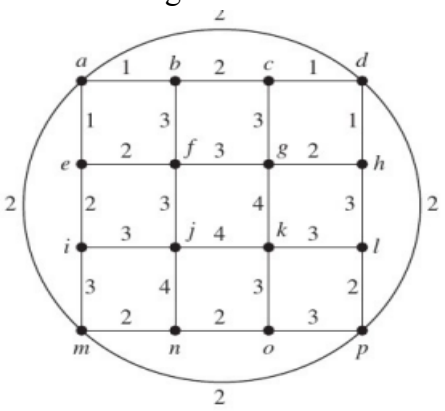


14)Find Minimum spanning tree for the given graph using Prim's algorithm?



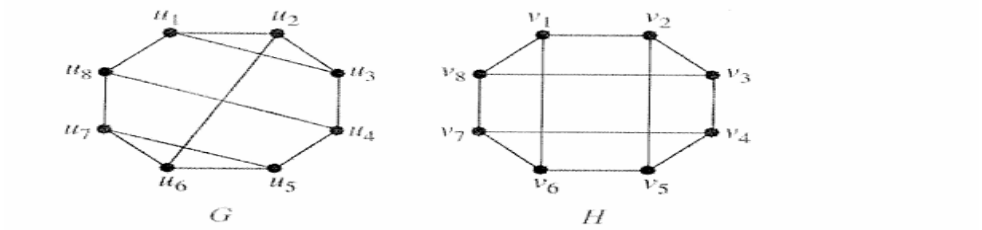
15)Use Huffman's algorithm to provide an optimal average-bit-length code for the probability distribution a: 0.2, b: 0.2, c: 0.15, d: 0.15, e: 0.15, f: 0.1, and g: 0.05. Draw a binary tree to find the prefix code for for each probability distribution and compute the average bit-length of a codeword

16) Use Kruskal's algorithm to find a minimum spanning tree for the weighted graph in the Figure below.



17) (i) What is the value of each of the prefix expressions + − ↑ 3 2 ↑ 2 3 / 6 − 4 2? (ii) What is the value of each of the postfix expressions 3 2 ∗ 2 ↑ 5 3 − 8 4 / ∗ −?

18) Use paths either to show that these graphs are not isomorphic or to find an isomorphism between them.



19) Define the following terms:

1. m-ary Tree
2. Tree
3. Height of Tree

4. Forest
5. Siblings
6. Level of Tree

20) Draw the following graphs:

a) K7 b) K1,8 c) K4,4 d) C7 e) W7 f) Q3

Subject Teacher **Head of the Department**