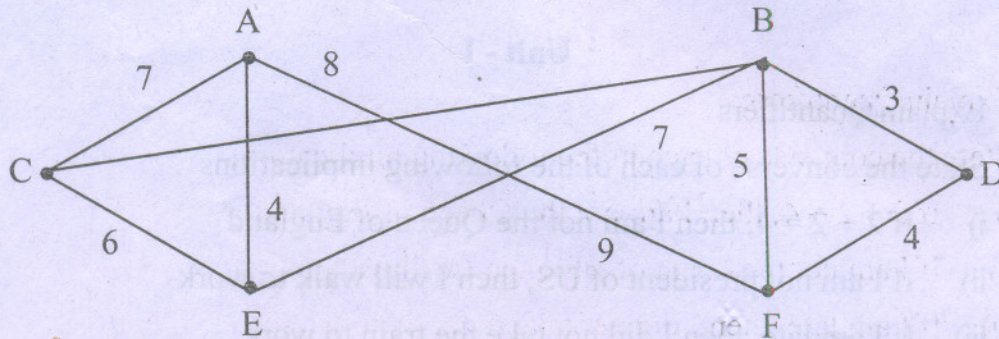


Unit - III

3. a) Write short note on (any two) : (8)
- Bipartite and complete bipartite graph
 - Eulerian and Hamiltonian Graphs
 - Kuratowskis Theorem
 - Isomorphic Graphs.
- b) Show the total number of odd degree vertices of a (p, q) , graph (graph with p vertices and q edges) is even. (8)

OR

3. a) Explain the Minimal Spanning Tree. Also write the Kruskal Algorithm for find Minimal Spanning tree. (8)
- b) Given the Graph in following figure. Apply Prim's algorithm to obtain the minimal spanning tree (8)



Unit - IV

4. a) In the Survey of 60 people it was found that 25 read News week, 26 read Time and 26 read the magazine fortune. Also 9 read both News week and Fortune, 11 read News week and Time and 8 read both time and fortune If 8 read none of the three magazines, determine the number of people who read exactly one magazine. (8)
- b) What is the Pigeonhole principle and the Extended Pigeonhole principle also prove both. (8)

OR

4. Let $f : A \rightarrow B$ and $g : B \rightarrow C$ be two invertible then (16)
- $g \circ f$ is invertible and
 - $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$