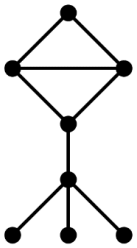
Assignment-2

KKSJ MANINAGAR SCIENCE COLLEGE

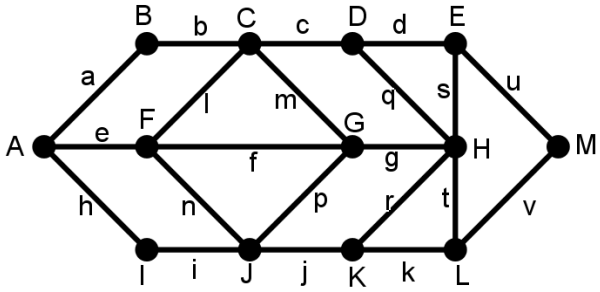
B. Sc. (Sem-VI)

MAT-310 (Graph Theory)

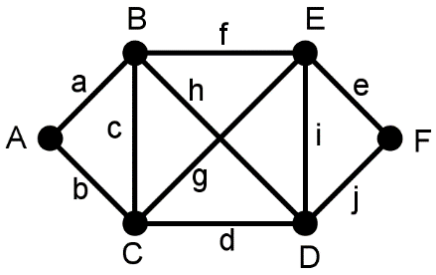
1. Prove that a graph G is connected if and only if it has a spanning tree.
2. Give a list of all spanning trees, including isomorphic ones, of the connected graph:



3. Use Back-tracking algorithm to find a shortest path from a vertex A to a vertex M.



4. Let G be a simple graph with at least three vertices. If for each pair of distinct vertices u and v of G, there are two internally disjoint $u-v$ paths in G. then prove that G is 2−connected.
5. If G is a graph in which the degree of every vertex is at least two then prove that G contains a cycle.
6. A connected graph G is Euler if and only if the degree of every vertex is even.
7. Define closure of a graph. Prove that a simple graph G ia Hamiltonian if and only if its closure $c(G)$ is Hamiltonian.
8. Use the Fleurys algorithm to produce an Euler tour for the following graph



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