R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, October/November - 2020
GRAPH THEORY
(Computer Science and Engineering)
Time: 2 hours   Max. Marks: 75
Answer any Five Questions
All Questions Carry Equal Marks
- - -

1. What are isomorphic graph? Determine whether the following graphs shown in figure 1are isomorphic?   [15]
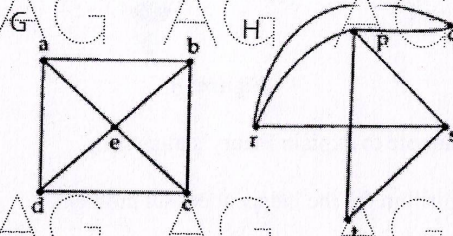

Figure: 1

2.a) Give an example to explain the Graph theoretic model of the LAN problem with relevant diagrams and representations.

   b) List and mention various ways of representing graphs and give pros and cons of each representation.   [7+8]

3. Using Dijkstras shortest path algorithm find the shortest route from node a to node e in the given graph shown in figure 2.   [15]
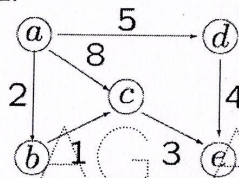

Figure: 2

4. Write down the Floyd Warshall algorithm to solve the all pairs shortest paths problem on a directed graph. Run your algorithm on the following weighted directed graph shown in figure 3 and show the matrix Dk that results for each iteration of the outer loop.   [15]
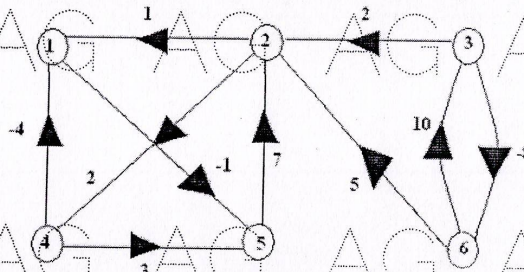

Figure: 3

5. What is the difference between a spanning tree and a minimum spanning tree? Apply Prim's algorithm on the following graph shown in figure 4 to find minimum spanning tree. [15]
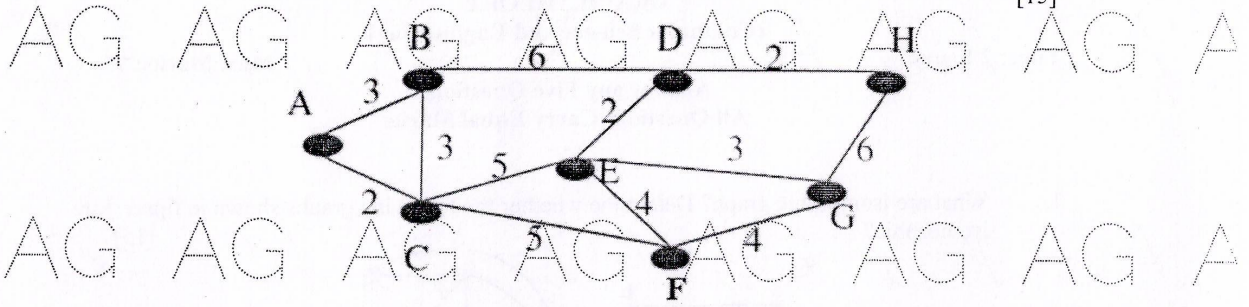

Figure: 4

6. Demonstrate an example to explain Fleury's algorithm. [15]

7. Explain greedy algorithm for the independent set problem. [15]

8. Explain the steps for Edge-coloring of bipartite graphs. [15]

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