Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14EC2042** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ROUTING ALGORITHMS FOR WIRELESS MOBILE NETWORKS** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Express the conditions for relaxing function in the routing algorithm. | CO1 | 4 |
| b. | Validate in detail about dominating set based routing with a neat sketch.    From the above figure, find the minimum connected dominating set using bi-partite graph and set covering problem. Evaluate the minimum covering number using Greedy algorithm. | CO2 | 16 |
| **(OR)** | | | | |
| 2. | a. | Discuss the effective goal in MANET and also criticize the power aware routing metrics in mobile networks. | CO1 | 12 |
| b. | Manipulate how the reliable flooding can be reduced in the link state network. | CO1 | 8 |
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| 3. | a. | Estimate the worst case of time complexity of Dijkstra’s algorithm. | CO1 | 5 |
| b. | Determine least cost path of undirected graph using Dijkstra algorithm for the given network below.  http://www4.ncsu.edu/~chou/course/Diagrams/distance-vector.gif  Assume that A is the starting node and trace the shortest path. | CO2 | 15 |
| **(OR)** | | | | |
| 4. | a. | Prove that the number of vertices ‘n’ in routing network is equal to ‘n-1’ iteration for this state diagram shown in figure. | CO2 | 10 |
|  | b. | Let G be a graph (p,q) which has n – no. of vertices, m – no. of edges and r – no. of regions. Prove that the following statement using induction hypothesis:  i) G is not a tree ii) G is a tree  iii) G is a planar graph iv) G is polyhedral | CO2 | 10 |
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| 5. | a. | Explain the different classes of graphs. | CO1 | 5 |
| b. | Determine number of vertices, edges, degree of vertex and incidence of the graph.  Image result for graph theory  Convert this graph into planar graph and prove the Euler’s formula. | CO2 | 7 |
| c. | Describe undirected graph with a neat sketch. Consider an undirected graph as shown below:  Image result for graph theory  Evaluate degree of vertex, transitive closure and reachability matrix of the graph. | CO2 | 8 |
| **(OR)** | | | | |
| 6. | a. | Infer the concept on multi-cast optimized link state routing protocol with an example. | CO3 | 10 |
| b. | How distributed underwater clustering scheme protocol works? | CO3 | 5 |
| c. | List all the LEACH protocol used in an energy efficient routing network with an example. | CO3 | 5 |
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| 7. | a. | Difference between regular and complete graph. | CO1 | 5 |
| b. | When the graph is said to be job scheduling problem? | CO2 | 5 |
| c. | Let G be graph of (p,q) which has ‘n’ number of vertices, ‘m’ number of edges and ‘r’ number of regions. Prove that the following statements are satisfied or not.   1. G is not tree: n-m+r=2   ii) G is planar graph: n-m+r=1+C(G) | CO2 | 10 |
| **(OR)** | | | | |
| 8. | a. | Demonstrate the working of any two energy efficient routing protocol with a neat sketch. | CO3 | 12 |
| b. | Narrate the phases involved in working of low-energy localize clustering with an example. | CO3 | 8 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Elaborate the concept of transmission range based topology with a neat sketch. | CO3 | 10 |
| b. | Illustrate an energy efficient routing protocol for wireless mobile network. | CO3 | 10 |