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| **GE 2318 Homework #3 2024**  **Name: Student ID:**  **Q1:**  This is the Travelling Salesman Problem on a fully-connected graph.  Total path-length: A🡪B🡪C🡪E🡪D🡪A = 5+6+8+7+10 = **36**    **Q2:** (1) Predict Node f will connect to which node(s), and explain why you think so. Use all criteria that you learned from Lecture-3.  (i) Node f will connect to Node **c**, because they both have degree 1 (degree similarity)  (ii) Node f will connect to Node **b** and Node **e**, because Noe f has the same distance 2 to Node b and to Node e (distance similarity)  (2) Compute the coreness of Node a and Node b, and then compute the coreness of the whole network.    Coreness of Node a = **1**, Coreness of Node b = **2**, Coreness of the network = **2**  **Q3:** In terms of efficiency, cost and robustness, show the advantages and disadvantages of the following four types of large-scale networks.   |  |  |  | | --- | --- | --- | |  | Advantages | Disadvantages | | Ring-shaped networks | Cost-effective | Not-efficient, Not-robust | | Small-world networks | Efficient, Robust | Costly (some long-distance connections could be expensive) | | Scale-free networks | Efficient | Costly, Not-robust | | Fully-connected networks | Efficient, Robust | Costly | |