**20DS701/PE**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **December, 2023** | **Data Science** | | |
| **Seventh Semester** | **Social Network Analysis** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsory.*** | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | **(4X14=56 Marks)** |
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|  |  |  | CO | BL | M |
| 1 | a) | Find the Degree of all the nodes of the network?  Capture1.JPG | CO2 | L2 | 1M |
|  | b) | What are the Applications of Social network analysis? | CO1 | L1 | 1M |
|  | c) | What is Node Centrality? | CO2 | L1 | 1M |
|  | d) | Define Ego-Centric Network with example? | CO2 | L2 | 1M |
|  | e) | Disadvantages of PageRank? | CO2 | L1 | 1M |
|  | f) | Define a K-plex and a K-Clique? | CO1 | L1 | 1M |
|  | g) | Write Balance Theory of Undirected Signed network along with table? | CO2 | L1 | 1M |
|  | h) | Define Network Schema & Meta-Path | CO2 | L2 | 1M |
|  | i) | What are the Applications of Communication Detection? | CO3 | L1 | 1M |
|  | j) | What is Network Measures with categorization structure? | CO1 | L1 | 1M |
|  | k) | Importance of PageRank & what are the Types of PageRank? | CO3 | L2 | 1M |
|  | l) | Explain Epidemic SEIR Model | CO4 | L2 | 1M |
|  | m) | General Algorithm steps in Dynamics? | CO4 | L3 | 1M |
|  | n) | Define Node-centric Community Detection? | CO3 | L1 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | Briefly Explain any three types of social network Applications? | CO1 | L2 | 7M |
|  | b) | Explain in detail Link-Centric View? | CO1 | L2 | 7M |
| **(OR)** | | | | | |
| 3 | a) | Find the Paths of Density, Diameter, Distance of given Network?  Capture1.JPG | CO1 | L3 | 7M |
|  | b) | Assume Network and Measure the Clustering Co-efficient (CC) of Local Clustering coefficient & Global Clustering coefficient using Open & Closed triplets | CO1 | L4 | 7M |
| **Unit-II** | | | | | |
| 4 | a) | What are Centrality Measures and Explain Eigen vector & Degree Centrality? | CO2 | L1 | 7M |
|  | b) | What is Meta-Path and determine the formulation of PathSim-based similarity Scores? | CO2 | L1 | 7M |
| **P.T.O**  **20DS701/PE** | | | | | |
| **(OR)** | | | | | |
| 5 | a) | Define about PageRank and Hub & Authority? | CO2 | L1 | 7M |
|  | b) | Discuss about Local Clustering Coefficient & Small-world Property on Regular Ring Lattice Network Model? | CO2 | L2 | 7M |
| **Unit-III** | | | | | |
| 6 | a) | Explain Permanence and Community Detection & Overlapping Community Detection | CO3 | L4 | 7M |
|  | b) | Demonstrate Community Detection Modularity & Fast Greedy Algorithm | CO3 | L3 | 7M |
| **(OR)** | | | | | |
| 7 | a) | Evaluating any two Link Prediction Methods & List the Link Prediction Methods? | CO3 | L4 | 7M |
|  | b) | Explain Local Heuristic Model? | CO3 | L2 | 7M |
| **Unit-IV** | | | | | |
| 8 | a) | Discuss Cascade in Infinite Chain Networks: Generic Model? | CO4 | L2 | 7M |
|  | b) | Write a Case Study: The “Indignados” Movement/15-M Movement | CO4 | L4 | 7M |
| **(OR)** | | | | | |
| 9 | a) | Probabilistic Cascade Model: Random Tree & The Reproductive Number? | CO4 | L2 | 7M |
|  | b) | Community Detection Methods: A Taxonomy & Explain Disjoint Community? | CO4 | L3 | 7M |

