

1019

B.E. (Computer Science and Engineering)
Eighth Semester

CS-801: Network Science: Structural Analysis and Visualization

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) List any four metrics of a network.
- b) What is diameter coefficient?
- c) What is mean-fields approximation?
- d) What do you understand by Epidemics models?
- e) What is random walk on graphs? (5x2)

UNIT – I

- II. a) What is Zipf's Law? Explain with example. (5,5)
- b) What do you understand by Power Law Distribution?
- III. a) Explain Erdos-Reni Random Graph Model. (5,5)
- b) Discuss Page rank and HITS algorithm.
- IV. What is a centrality measure? Discuss closeness, betweenness, katz and eigenvector centrality. (10)

UNIT – II

- V. Discuss SIR for networked case and derive its late time properties. (10)
- VI. What are social networks? How rumor spread models work on social networks? Explain with an example. (10)
- VII. a) What is Laplace Matrix? Give an example. (5,5)
- b) How the most influential node can be found in a network?

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