

1059

B. Engg. (Computer Science and Engineering)

8th SemesterCS-801: Network Science: Structural Analysis and Visualization

Time allowed: 3 Hours

Max. Marks: 50

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

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- I. (a) Pareto distribution.
 (b) Configuration model.
 (c) Phase transition
 (d) Normalized laplacian
 (e) Homogenous models

UNIT-I

- II. (a) How graphs and network theory are related? Explain in detail.
 (b) Write briefly about "Scale-free networks" and "Rank-frequency plot". (5+5)
- III. (a) How random graph model is created using Poisson and Bernoulli distributions?
 (b) Explain diameter and cluster co-efficient usefulness for random graphs. (5+5)
- IV. (a) Why centrality is measured? Explain betweenness and eigenvector centrality.
 (b) How HITs algorithm works? Explain. (5+5)

UNIT-II

- V. (a) Define diffusion equation. Explain its solution through example.
 (b) What is epidemic? Explain spread of epidemics on network. (5+5)
- VI. (a) What is Rumer? Explain Rumer spreading.
 (b) How spread of information takes place through Cascade propagation tree? (5+5)
- VII. (a) What is infection propagation? Explain simulation of infection propagation.
 (b) Explain linear threshold model in practical situation. (5+5)

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