Exam.Code:0920
Sub. Code: 33476

2055

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. I which is compulsory and selecting two questions from each Unit.

I. Explain the following:-

(a) Rank-frequency plot

(b) Katz status index

(c) Performance evaluation

(d) Sub-modular function

(e) Stationary distribution (5x2)

UNIT - I

II. a) Why are complex network used? Explain various properties and associated metrics also.

b) Why are Poisson and Bernoulli distributions used? Exemplify. (2x5)

III. a) What is normalization? How do you do that through moments?

b) What is random graph? How do you model it through 'Erobs-Reni' model? Exemplify. (2x5)

IV. a) What is centrality? How do you measure it through 'Spearman rho and Kendall-Tau ranking'?

b) Why HITS algorithm is implemented and how? Explain. (2x5)

UNIT - II

V. a) What is diffusion? Draw difference between physical and information diffusion.

b) Exemplify Laplace operator, matrix and normalized Laplacian in detail. (2x5)

P.T.O.

VI. a) How do you check the probability of epidemics? Explain its spread on network.

b) What is propagation? Explain Cascades and information propagation trees in this context. (2x5)

VII. a) What is diffusion of innovation? Explain linear threshold model in this context.

b) Explain various rumor spreading models? (2x5)

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