Exam.Code:0920
Sub. Code: 7037

2090

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 50% of Total Questions of Question Paper. Time: 2 Hours
All will carry equal marks. Fraction will be lower digit.

x-x-x

I. Attempt the following:-

a) What is Zipf Law?

b) Why closeness centrality is better than degree centrality?

c) Define Kendall-Tau rank distance.

d) Why scientists do epidemics modelling?

e) What is Social Contagion? (5x2)

UNIT – I

II. Describe the various quantitative measures which can be used to assess the importance of a vertex in a network, and explain the basis of their use to measure importance. (10)

III. State the HITS algorithm for the computation of hub and authority scores based on the adjacency matrix of a directed network. (10)

IV. What is Erdos-Renyi random network? What are its properties and its uses? (10)

UNIT – II

V. What is a random walk? Consider an undirected and unweighted graph, derive the relationship between stationary distribution of random walker and degree of the nodes. Compute the stationary distribution for the Graph above. (10)

VI. What are SIS and SIR models? Discuss them for homogeneous population mixing case? (10)

VII. What do you understand by spreading rumors on social networks? How to model this phenomenon? (10)

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