

Branch – SOFTWARE SYSTEMS (Five Years Integrated)

SOCIAL NETWORK ANALYSIS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 _____ in a network is referred to as social contagion, because it spreads from one person to another in the style of a biological epidemic.
(i) Structural effects (ii) Population effects
(iii) Cascading behavior (iv) Strategic interaction
- 2 A link represents _____ communication, if the user both sent messages to the friend at the other end of the link, and also received messages from them during the observation period.
(i) one-way (ii) reciprocal
(iii) maintained relationship (iv) All the above
- 3 In SIS Epidemic model, which of the following state is not present?
(i) Susceptible (ii) Removed (iii) Infections (iv) Life cycle
- 4 _____ is the amount of money it expects to receive on average each time a user clicks on one of its ads and arrives at its site.
(i) Click through rate (ii) Valuation for the item
(iii) Revenue per click (iv) Market clearing price
- 5 Authority update-rule refers to _____
(i) The intuition behind authorities is based on the idea that pages play multiple roles in the network
(ii) The intuition behind Page rank starts with simple voting based on in-links
(iii) For each page p, update hub(p) to be the sum of the authority scores of are pages that it points to
(iv) For each page p, update auth(p) to be the sum of the hub scores of all pages that point to it

SECTION – B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Discuss the types of networks.
OR
b Illustrate the tools for visualizing network data.
- 7 a Show the mechanisms underlying Homophily.
OR
b Explain the structural balance in positive and negative relationships.
- 8 a Illustrate the Cascades and Clusters.
OR
b Explain the SIR Epidemic model.

Cont...

- 9 a Show the results of Network Exchange experiments
OR
b How Advertising can be used as a matching market?
- 10 a Discuss the Spectral analysis of Hubs and Authorities.
OR
b Illustrate Link analysis for web mining

SECTION -C (30 Marks)

Answer ALL questions
ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11 a Explain Population effects in Network dynamics
OR
b Write short notes on Nodes, edges and paths in Graph theory
- 12 a Analyze Triadic closure and reasons for triatic closure.
OR
b Discuss structural holes in strong and weak ties.
- 13 a Illustrate Rich-Get-Richer Models.
OR
b Analyze a model for decentralized search.
- 14 a Discuss Dependence exclusion and satiation with suitable example of a powerful network position.
OR
b Illustrate setting prices through an auction.
- 15 a Summarize Page Rank with suitable example.
OR
b Discuss Random walks.

Z-Z-Z

END