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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 50029

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025

Seventh Semester

Information Technology

U19CSV25 – SOCIAL NETWORK ANALYSIS

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 – Evaluating
	K2 – Understanding	K4 – Analyzing	K6 – Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	How does social web differ from semantic web?	2	K2	CO1
2.	What is meant by network density and clustering coefficient?	2	K1	CO1
3.	Differentiate between OWL Lite, OWL DL and OWL Full.	2	K2	CO2
4.	Mention the importance of ontological aggregation in social network analysis.	2	K1	CO2
5.	Why is community detection important for understanding social network dynamics?	2	K2	CO3
6.	Differentiate between overlapping and disjoint community detection.	2	K2	CO3
7.	How can user data be classified for storage, analysis and retrieval?	2	K2	CO4
8.	Differentiate between reputation-based and relationship-based trust systems.	2	K2	CO4
9.	What is a clique and how does it relate to clustering?	2	K1	CO5
10.	What is centrality in graph theory and why is it important in social network analysis?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Discuss the use of Social Network Analysis (SNA) in Cybersecurity and threat detection.	13	K2	CO1
	(OR)			
b)	Explain the following SNA measures: Degree Centrality, Betweenness Centrality, Closeness Centrality, Eigenvector Centrality.	13	K1	CO1
12. a)	Why are ontologies critical for achieving interoperability in the Semantic Web? Outline the techniques used by ontologies to support intelligent agents in the semantic web.	(8+5=13)	K2	CO2
	(OR)			
b)	Explain the procedure used by semantic reasoning to improve the accuracy and richness of social network analysis compared to traditional graph analysis.	13	K2	CO2
13. a)	Describe community detection algorithms: Girvan Newman algorithm, Louvain method, Label propagation, Spectral Clustering.	13	K1	CO3
	(OR)			
b)	Differentiate Decentralized Online Social Networks (DOSN) from centralized platforms. Compare community structure in DOSN with those in traditional social networks.	(7+6=13)	K2	CO3
14. a)	By what means can social platforms create new human experiences through augmented / virtual reality, gamification or intelligent assistants?	13	K2	CO4
	(OR)			
b)	Demonstrate the use of Social Network Analysis in predicting user behavior (e.g., content sharing, group formation). In what ways can user interaction patterns help in detecting behavioral changes over time?	(7+6=13)	K2	CO4
15. a)	Compare matrix-based and node-link based visualizations in terms of scalability, pattern recognition, usability.	13	K2	CO5
	(OR)			
b)	Describe the approach in using matrix representations to store and process social network data efficiently. What are the benefits of using matrix based visualizations over node – link diagrams?	13	K3	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	<p>You are given a dataset representing the communication network within a mid-sized company (nodes = employees, edges = communication frequency).</p> <p>Describe the steps you would take to preprocess and visualize the network.</p> <p>Identify and explain which centrality measures you would use to find the key influencers in the organization.</p> <p>(OR)</p>	(8+7= 15)	K2	CO5
b)	<p>A social media platform wants to understand how different user groups form communities around shared interests and detect changes over time.</p> <p>What community detection algorithms would you recommend and why?</p> <p>How would you validate the quality of detected communities?</p>	(10+5 = 15)	K3	CO3