SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

QUESTION BANK

VIII SEMESTER

1908012 - SOCIAL NETWORK ANALYSIS

Regulation – 2019

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(EVEN SEMESTER)

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

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SUBJECT : 1908012 - SOCIAL NETWORK ANALYSIS

SEM / YEAR: VIII/ IV (CSE) & VI/ III (AI&DS)

UNIT I -INTRODUCTION			
Introduction to Semantic Web: Limitations of current Web - Development of Semantic Web - Emergence of the Social Web - Social Network analysis: Development of Social Network Analysis- Key concepts and measures in network analysis - Electronic sources for network analysis: Electronic discussion networks, Blogs and online communities - Web-based networks - Applications of Social Network Analysis.			
PART – A			
Q.No	**Questions**	**BT**	**Competence**
1	What is network analysis?	BTL-1	Remembering
2	What is the main function of semantic web?	BTL-1	Remembering
3	Identify the use of semantic web in current system .	BTL-3	Applying
4	Define semantic web.	BTL-1	Remembering
5	List out the purpose of semantic web.	BTL-1	Remembering
6	What is the function of machine-readable description?	BTL-4	Analyzing
7	Why is semantic web so useful for the development of web?	BTL-4	Analyzing
8	List the activities performed using HTML.	BTL-1	Remembering
9	Illustrate the global structure of networks.	BTL-3	Applying
10	Differentiate web2.0 and web 3.0.	BTL-2	Understanding
11	Give the design flaws involved in html forms.	BTL-2	Understanding
12	What are limitations of web2.0?	BTL-1	Remembering
13	Explain why is semantic web regarded as integrator?	BTL-5	Evaluating
14	Why is HTML used in semantic web?	BTL-4	Analyzing
15	Identify the uses of semantic web solution.	BTL-3	Applying
16	What is Core-Periphery (C/P) structure.	BTL-2	Understanding
17	Assess the relationship between the different dimensions of personal networks.	BTL-5	Evaluating
18	Generalize the macro-structure of social networks.	BTL-6	Creating
19	Evaluate the different approaches to deal with name ambiguity.	BTL-5	Evaluating
20	How the 2D lattice model of networks is converted to a toroidal lattice model?	BTL-6	Creating
21	Differentiate intellectual capital and Social Capital.	BTL-2	Understanding
22	Will the Jaccard-coefficient show a correlation in cases where there is a significant difference in the sizes of the two sets? Justify your answer.	BTL-4	Analyzing

23	State Jaccard-coefficient.	BTL-2	Understanding
24	Examine Blogs and online communities.	BTL-3	Applying
PART – B			
1	List and briefly describe the limitation of current web. (13)	BTL-1	Remembering
2.	Describe the following in detail: (i) The semantic web (6) (ii) The semantic web solution (7)	BTL-2	Understanding
3	Describe the development of the Semantic Web (13)	BTL-1	Remembering
4	Summarize the emergence of the social web (13)	BTL-2	Understanding
5	What is network analysis? Explain. (5) Examine the development of Social Network Analysis. (8)	BTL-1	Remembering
6	Illustrate the global structure of networks with an example. (13)	BTL-3	Applying
7	Discuss in detail about the macro-structure of social networks. (13)	BTL-3	Applying
8	Describe the following networks in detail. (i) Social Networks (6) (ii) Personal Networks (7)	BTL-1	Remembering
9	Briefly explain the following: (i) Electronic discussion networks (7) (ii) Blogs and online communities (6)	BTL-4	Analyzing
10	Examine the different dimension of social capital and their related concepts and measures. (13)	BTL-3	Applying
11	Summarize the key concepts and measures in network analysis. (13)	BTL-2	Understanding
12	Explain in detail about web based networks. (13)	BTL-4	Analyzing
13	Explain the Research, development and standardization of semantic web. (13)	BTL-5	Evaluating
14	Summarize: The structural dimension of social capital (7) The relational dimension of social capital (6)	BTL-5	Evaluating
15	Discuss the technology adaptation of semantic web in detail. (13)	BTL-2	Understanding
16	Explain about Jaccard-coefficient and show how it is used to relate two sets and their union (13)	BTL-4	Analyzing
17	Discuss the business application of social network analysis in detail. (13)	BTL-6	Creating
PART – C			
1.	Summarize the limitations of the current web and discuss how sematic web solves the problem. (15)	BTL-5	Evaluating

2.	(i) Generalize the process of social network analysis (7) (ii) Summarize the development of Social Network Analysis (8)	BTL-6	Creating
3.	Evaluate the key concepts and measures in network analysis from the macro level to the micro level. (15)	BTL-5	Evaluating
4.	Explain the social network analysis process in Blogs and online communities and Personal networks. (15)	BTL-6	Creating
5.	Explain in detail about the Electronic sources for network analysis (15)	BTL-5	Evaluating

UNIT II - MODELLING, AGGREGATING AND KNOWLEDGE REPRESENTATION

Ontology and their role in the Semantic Web: Ontology-based knowledge Representation - Ontology languages for the Semantic Web: Resource Description Framework - Web Ontology Language - Modelling and aggregating social network data: State-of-the-art in network data representation - Ontological representation of social individuals - Ontological representation of social relationships - Aggregating and reasoning with social network data

PART – A

Q.No	Questions	BT Level	Competence
1	What are the uses of statistics in data mining?	BTL-2	Understanding
2	Define ontology.	BTL-1	Remembering
3	Differentiate lightweight ontology heavyweight ontology.	BTL-4	Analyzing
4	What is the use of ontology languages?	BTL-2	Understanding
5	List the special characteristics of ontologies.	BTL-1	Remembering
6	List the Ontology languages used for the Semantic Web.	BTL-1	Remembering
7	Compare RDF and UML.	BTL-5	Evaluating
8	Write the features of SPARQL.	BTL-2	Understanding
9	What is the Resource Description Framework ?	BTL-1	Remembering
10	Give the components of a learning system.	BTL-3	Applying
11	Illustrate the RDF Schema vocabulary with an example.	BTL-3	Applying
12	Compare the Entity/Relationship (E/R) model and the relational model.	BTL-4	Analyzing
13	Show the Semantic Web layer cake.	BTL-1	Remembering
14	Point out the Unique features of RDF/OWL.	BTL-4	Analyzing
15	Discover the difference between Extensible Markup Language (XML) and XML Schema.	BTL-3	Applying
16	Describe the different forms of network data representation.	BTL-2	Understanding
17	Analyze the characteristics of social relationships.	BTL-4	Analyzing
18	Assess FOAF Ontological representation of social individuals for characterizing individuals.	BTL-5	Evaluating

19	Explain the idea ontology mapping.	BTL-5	Evaluating
20	List the basic variations on what point the identity reasoning is performed.	BTL-1	Remembering
21	Discuss the relationship between Description Logic versus rule-based reasoners.	BTL-2	Understanding
22	Compare Forward chaining versus backward chaining	BTL-3	Applying
23	Generalize the concept of reasoning with instance.	BTL-6	Creating
24	Discover the alternative RDF(S) representation of relationships.	BTL-6	Creating
PART – B			
1	Describe Ontologies and their role in the Semantic Web.(13)	BTL-1	Remembering
2	Describe ontology languages for the Semantic Web. (13)	BTL-1	Remembering
3	Explain in detail about (i) The Resource Description Framework (RDF). (7) (ii) RDF and the notion of semantics (6)	BTL-4	Analyzing
4	Compare and contrast the Unified Modelling Language and RDF/OWL language. (13)	BTL-4	Analying
5	Discuss in detail about Ontology-based Knowledge Representation. (13)	BTL-2	Understanding
6	Describe the Web Ontology Language in detail. (13)	BTL-1	Remembering
7	Examine the network data representation schemes. (13)	BTL-1	Remembering
8	(i) Analyze the features of XML and RDF.(8) (ii) Compare the E/R, UML, XML and RDF/OWL languages (5)	BTL-4	Analyzing
9	Describe the ontological representation of social relationships (13)	BTL-2	Understanding
10	Compare Description Logic versus rule-based reasoners and Forward versus backward chaining(13)	BTL-3	Applying
11	i) Compose a solution for resolving inequality of resources in OWL.(6) ii) Write the Representation of identity of resources in RDF. (7)	BTL-6	Creating
12	Discuss about Aggregating and reasoning with social network data. (13)	BTL-2	Understanding
13	Describe the Conceptual model of representing social relationships. (13)	BTL-2	Understanding
14	i) Examine the timing of reasoning and the method of representation (7) ii) Identify the use of Evaluating smushing (6)	BTL-3	Applying
15	i) Explain the OWL Full vocabulary in detail.(7) ii) Explain the Semantic Web layer cake in detail. (6)	BTL-5	Evaluating
16	i) Identify the Unique features of UML (6) ii) Identify the unique features of RDF/OWL(7)	BTL-3	Applying
17	Write a set of triples describing two persons represented in the Turtle language and convert it into graph	BTL-5	Evaluating

	visualization of the RDF document.		
Part C			
1	Discuss the key challenge of the Semantic Web and the role of Ontologies in the Semantic Web. (15)	BTL-5	Evaluating
2	Explain in detail about the ontologies and ontology languages for the Semantic Web (15)	BTL-6	Creating
3	Explain the schemes for mapping of an ontology and an interpretation domain. (15)	BTL-5	Evaluating
4	Design a method for Modelling and aggregating of social network data. (15)	BTL-6	Creating
5	Compare and Contrast the E/R, UML, XML and RDF/OWL languages. Which one is more efficient? Justify your answer. (15)	BTL-5	Evaluating

UNIT III EXTRACTION AND MINING COMMUNITIES IN WEB SOCIAL NETWORKS

Extracting evolution of Web Community from a Series of Web Archive - Detecting communities in social networks - Definition of community - Evaluating communities - Methods for community detection and mining - Applications of community mining algorithms - Tools for detecting communities social network infrastructures and communities - Decentralized online social networks

PART A

Q.No	Questions	BT Level	Competence
1	Give the Algorithms that are used for building charts.	BTL-2	Understanding
2	What is a web community?	BTL-1	Remembering
3	Discover the size distribution of communities	BTL-3	Applying
4	Write notes on web community charts.	BTL-2	Understanding
5	How is web community extracted?	BTL-4	Analyzing
6	Define the principle elements of a public key crypto system.	BTL-1	Remembering
7	What is meant by virtual community?	BTL-1	Remembering
8	Examine the purpose of evolution metrics	BTL-1	Remembering
9	What is meant by community structure?	BTL-3	Applying
10	Show the attributes that are used to represent how many URLs the focused community obtains or loss?	BTL-5	Evaluating
11	Justify the statement" The Web is extremely dynamic".	BTL-6	Creating
12	Give the significance of community discovery in social network analysis.	BTL-2	Understanding
13	What are the uses of community discovery?	BTL-2	Understanding
14	Mention the advantages of hierarchical algorithms.	BTL-4	Analyzing
15	What is Markov clustering?	BTL-1	Remembering
16	Draw a neat sketch showing the Optimization Based Algorithms	BTL-3	Applying
17	Illustrate the process of network reduction for analysing social networks.	BTL-3	Applying
18	Infer spectral algorithms.	BTL-4	Analyzing
19	Point out the tools for interactively visualizing and analyzing small networks.	BTL-4	Analyzing

20	Categorize the methods for community detection.	BTL-5	Evaluating
21	What is the global definition of community?	BTL-1	Remembering
22	How will you evaluate the communities?	BTL-5	Evaluating
23	Give the role decentralized Online Social Networks	BTL-2	Understanding
24	Show how community mining techniques can be applied to the analysis of scientific collaborations?	BTL-6	Creating
PART B			
1	What is web community? How will you extract of web community from a series of web archives? (13)	BTL-1	Remembering
2	Summarize the concept of Web Community Chart in detail. (13)	BTL-2	Understanding
3	i) Discover the Evolution of Web Community Charts(6) ii) Give the types of Changes in community structure. (7)	BTL-3	Applying
4	i) Discuss the various evolution metrics.(7) ii) Describe the various definitions of community.(6)	BTL-2	Understanding
5	Describe the core methods of community discovery in social networks.	BTL-3	Applying
6	i) Apply the definition of Community in terms of local, global and vertex similarity. (6) ii) How the Communities are Evaluated? Explain. (7)	BTL-3	Applying
7	Explain how the Communities in Social Networks can be detected? (13)	BTL-1	Remembering
8	Explain Analysis Of Web Archives And Evolution Of Web Communities.(13)	BTL-4	Analyzing
9	Evaluate the Optimization Based Algorithms (13)	BTL-5	Evaluating
10	i) Summarize the Tools for detecting Large-Scale Networks(6) ii) Describe the tools for Interactive Analysis (7)	BTL-2	Understanding
11	List and explain the applications of Community Mining Algorithms.(13)	BTL-1	Remembering
12	Categorize the Methodologies of Network Community Mining and explain. (13)	BTL-4	Analyzing
13	Generalize the methods for community detection. (13)	BTL-6	Creating
14	i) Explain briefly about Discovering Scientific Collaboration Groups from Social Networks(6) ii) Explain the Mining of Communities from Distributed and Dynamic Networks (7)	BTL-4	Analying
15	Describe the decentralized Online Social Networks in detail.(13)	BTL-1	Remembering
16	Explain in detail the general architecture of a distributed online social network.(13)	BTL-5	Evaluating
17	Write short notes on i) Optimization Based Algorithms for Network Community Mining (7) ii) Heuristic Methods Network Community Mining (6)	BTL-2	Understanding
PART C			

1	Explain the details of changes of web communities, and the evolution metrics that can be used for finding patterns of evolution. (15)	BTL-5	Evaluating
2	Evolution Of Web Communities and the Analysis Of Web Archives (15)	BTL-6	Creating
3	Categorize the methods for detecting communities(15)	BTL-6	Creating
4	Discuss the tools for detecting communities from large scale networks, and interactively analyzing communities from small networks. (15)	BTL-5	Evaluating
5	Explain Applications of Community Mining Algorithms. (15)	BTL-5	Evaluating

UNIT IV PREDICTING HUMAN BEHAVIOUR AND PRIVACY ISSUES

Understanding and predicting human behaviour for social communities - User data management - Inference and Distribution - Enabling new human experiences - Reality mining - Context - Awareness - Privacy in online social networks - Trust in online environment - Trust models based on subjective logic - Trust network analysis - Trust transitivity analysis - Combining trust and reputation – Trust derivation based on trust comparisons - Attack spectrum and countermeasures.

PART – A

Q.No	Questions	BT Level	Competence
1	Define Context-Awareness.	BTL-1	Remembering
2	List the technologies that enable new Human	BTL-1	Remembering
3	Define Reality Mining.	BTL-1	Remembering
4	Define the classes of interoperability degree.	BTL-1	Remembering
5	List the categories of steps that enable human behavior understanding and prediction.	BTL-1	Remembering
6	What is Data Management?	BTL-2	Understanding
7	Illustrate the human Behavior Understanding and Prediction process.	BTL-3	Applying
8	Identify the categories of contexts.	BTL-3	Applying
9	Show the Context layering model for knowledge generation.	BTL-2	Applying
10	Explain the significance of Service Exposure and Control.	BTL-2	Understanding
11	Give the timeline of online social networking.	BTL-2	Understanding
12	Point out the properties of Online Social Networks.	BTL-4	Analyzing
13	Identify the top ten mostly visited social networks.	BTL-3	Understanding
14	How do you perform Trust Network Analysis?	BTL-1	Evaluating
15	Analyze the Operators for Deriving Trust.	BTL-4	Analyzing
16	What is Trust Transitivity Analysis?	BTL-4	Analyzing
17	Summarize the Principle of trust transitivity.	BTL-5	Evaluating

18	State Transitivity.	BTL-4	Analyzing
19	Define Dirichlet Reputation System.	BTL-5	Remembering
20	How Trust Derivation can be done based on Trust Comparisons?	BTL-6	Creating
21	Design Multinomial aggregate ratings from binomial trust in the form of an opinion.	BTL-6	Creating
22	What is bijective mapping?	BTL-2	Understanding
23	Demonstrate the process of Combining trust and reputation.	BTL-3	Applying
24	State the theorem of Equivalence Between Opinions and Reputations	BTL-5	Evaluating
	PART – B		
1	Examine User Data Management, Inference and Distribution in detail. (13)	BTL-1	Remembering
2	Summarize the understanding and predicting of human behaviour for social communities.	BTL-2	Understanding
3	Discuss about the technologies that Enabling New Human Experiences. (13)	BTL-1	Remembering
4	Explain briefly about the Context layering model for knowledge generation.(13)	BTL-3	Applying
5	Describe the Architectural Framework and methodologies for human behavior understanding and prediction (13)	BTL-1	Remembering
6	i) Briefly explain the Timeline of online social networking. (6) ii) Write notes on trust in Online Environment (7)	BTL-1	Remembering
7	What is online social networking ? Explain how to Manage trust in Online Social Networks? (13)	BTL-4	Analyzing
8	Explain the trust Models Based on Subjective Logic (13)	BTL-2	Understanding
9	i) Explain in detail about the operators for Deriving Trust (6) ii) Illustrate the Trust Network Analysis. (7)	BTL-2	Understanding
10	Describe Trust Transitivity Analysis detail. (13)	BTL-2	Understanding
11	Explain the different approaches to Combining Trust and Reputation (13)	BTL-5	Evaluating
12	Illustrate Simple reputation system and explain the Dirichlet Reputation System. (13)	BTL-3	Applying
13	i) Explain in detail about Deriving trust from conflicting trust .(7) ii) Compare the polarized and average reputation scores(6)	BTL-4	Analyzing
14	Explain Trust Derivation Based on Trust Comparison. (13)	BTL-4	Analyzing
15	Generalize the approaches Trust in online environment. (13)	BTL-6	Creating

16	Explain in detail about privacy in online social networks (13)	BTL-3	Applying
17	Briefly explain about the Attack spectrum and countermeasures. (13)	BTL-5	Evaluating
	PART – C		
1	With a neat diagram, explain the steps involved in human behavior understanding and prediction with different categories.(15)	BTL-5	Evaluating
2	Create the Context layering model for Knowledge Generation .(15)	BTL-6	Creating
3	(i) Enumerate the properties online social networks. (5) (ii) Evaluate the Privacy in online social networks. (10)	BTL-5	Evaluating
4	Elaborate the trust transitivity analysis and show how the Principle of trust transitivity works?(15)	BTL-6	Creating
5	Explain the trust derivation based on trust comparisons and evaluate deriving trust from conflicting trust.(15)	BTL-5	Evaluating

UNIT V - VISUALIZATION AND APPLICATIONS OF SOCIAL NETWORK

Graph theory - Centrality - Clustering - Node-Edge Diagrams – Matrix representation - Visualizing online social networks, Visualizing social networks with matrix-based representations - Matrix and Node-Link Diagrams – Hybrid representations - Applications - Cover networks - Community welfare - Collaboration networks - Co-Citation networks.

PART – A

Q.No	Questions	BT	Competence
1	Define Degree centrality	BTL-1	Remembering
2	What is Node density?	BTL-1	Remembering
3	Identify the three popular individual centrality measures.	BTL-1	Remembering
4	Define Clustering coefficient.	BTL-1	Remembering
5	Identify the visual representations that are considered appropriate to present network structures.	BTL-1	Remembering
6	How graphy theory concept is applied in social networks?	BTL-2	Understanding
7	Differentiate Force-Directed Layout and tree layout.	BTL-2	Understanding
8	How the Online Social Networks are visualized?	BTL-5	Evaluating
9	Give the Matrix Representations of social networks.	BTL-2	Understanding
10	What is Web Community?	BTL-3	Applying
11	What is Co-Authorship Networks?	BTL-2	Understanding
12	Show how FOAF (Friend-of-afriend) framework defines the relationship?	BTL-3	Applying
13	What is Web 2.0 Services?	BTL-4	Analyzing

14	State the difference Co-Citation Relations and Co-Authorship Networks.	BTL-4	Analyzing
15	Differentiate Interactive filtering and Interactive clustering.	BTL-4	Analyzing
16	Give the advantages matrix representation of social networks.	BTL-2	Understanding
17	Show the design goals node-link diagrams.	BTL-6	Evaluating
18	Discriminate matrix representation of social networks and node-link diagram of social networks.	BTL-5	Creating
19	How the Matrix and Node-Link Diagram are Merged?	BTL-6	Creating
20	Identify the applications of social network analysis?	BTL-3	Applying
21	Define Covert Networks.	BTL-1	Remembering
22	Analyze how social networks are used in Community Welfare?	BTL-4	Analyzing
23	How social networks are used in collaboration Networks?	BTL-6	Evaluating
24	What is Augmenting Matrices?	BTL-3	Applying
	PART-B		
1	Describe the metrics for social network analysis. (13)	BTL-1	Remembering
	Briefly explain about Visualization of Social Networks. (13)	BTL-4	Analyzing
2	Describe in detail about visualizing social networks (13)	BTL-1	Remembering
3	Write short notes on Web Communities (6) Email Groups (7)	BTL-2	Understanding
4	Describe in detail about Node-Edge Diagrams (13)	BTL-1	Remembering
5	Illustrate the various types Centrality (13)	BTL-3	Applying
6	Explain how social networks are analyzed using Digital Libraries (13)	BTL-2	Understanding
7	Describe the social networking with web 2.0 services. (13)	BTL-1	Remembering
8	Explain Visualizing Social Networks with Matrix based Representations (13)	BTL-2	Understanding
9	Compare and contrast Matrix and Node-Link Diagram representation.(13)	BTL-4	Analyzing
10	Illustrate the Hybrid Representations of social networks. (13)	BTL-3	Applying
11	Explain the tools for manipulating matrix and node-link representations.(13)	BTL-4	Analyzing
12	Generalize the role Co-Authorship Networks in social network analysis? (13)	BTL-6	Creating
13	Interpret the different types authorship networks. (13)	BTL-3	Applying

14	Explain covert network in detail. (13)	BTL-5	Evaluating
16	Describe in detail about the Applications of Social Network Analysis (13)	BTL-2	Understanding
17	Evaluate the Web Applications based on social networks.(13)	BTL-5	Evaluating
PART-C			
1	Explain the role of visualization and show the visual representation methods for visualizing social networks.(15)	BTL-5	Creating
2	Create a plan how to visualize social relationships and community structures using vizster (15)	BTL-6	Creating
3	Evaluate the analysis of digital libraries in the aspects of authors and writings.(15)	BTL-5	Evaluating
4	Elaborate how visualizing social relationships among email groups are carried out.(15)	BTL-6	Evaluating
5	Give any three applications of social network analysis.(15)	BTL-6	Creating