

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering - SEMESTER - VII EXAMINATION - WINTER 2025

Subject Code: 3174805

Date: 20-11-2025

Subject Name: Social Network Security

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
Q.1 (a) Define Social Network Analysis.	03
(b) Compare and contrast the Social Web and the Semantic Web.	04
(c) Discuss the development process of the Semantic Web and its main components.	07
Q.2 (a) Define privacy and security in the context of networked technologies.	03
(b) Write a short note on Data breaches.	04
(c) Discuss the advantages, challenges, and ethical issues associated with maintaining anonymity on social networking platforms.	07
OR	
(c) Discuss how cultural and social contexts impact willingness of users to share personal information online.	07
Q.3 (a) Differentiate between overlapping and non-overlapping communities with examples.	03
(b) Explain the major objectives of community detection in social networks.	04
(c) A social network dataset contains 1 million users and 10 million connections.	07
• Estimate the average degree of the network. • Discuss how Big Data technologies can be used to process and mine communities efficiently.	

OR

(a) Explain with example how web archives can be used to extract the evolution of web communities over time.	03
(b) Describe the functional architecture of a social network infrastructure used for large-scale community mining.	04
(c) Discuss methods for community detection and mining, and analytically compare Girvan–Newman and Louvain algorithms based on modularity optimization and computational efficiency.	07
Q.4 (a) Define user data management in the context of online social networks.	03

- (b)** Explain how machine learning models are used to predict user behavior in online communities. **04**
- (c)** Describe the workflow of Neo4j-based social network analysis, from data import and modeling to query execution and visualization using suitable example. **07**

OR

- (a)** List any three ways human experiences can be enhanced through social networking technologies. **03**
- (b)** Explain how context-awareness improves user experience in social platforms. **04**
- (c)** Discuss the architecture of Neo4j and explain how its graph storage and traversal mechanisms help in efficiently analyzing complex social networks. **07**

- Q.5**
- (a)** List any three common authentication methods used in social networking platforms. **03**
 - (b)** Explain the importance of roles and permissions in RBAC with an example. **04**
 - (c)** Discuss Single Sign-On (SSO) and Identity Federation. Explain how they improve user convenience and security in online social networks. **07**

OR

- (a)** List three access control requirements for social networking platforms. **03**
- (b)** Explain how firewalls help in enforcing access control in online social networks. **04**
- (c)** Discuss the challenges of implementing access control at multiple layers in a large-scale social network. **07**
