JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

B.Tech-VIII Semester (CSE/IT)

COURSE CODE (CREDITS): 18B1WCI847(3) MAX. MARKS: 15

COURSE NAME: SOCIAL AND INFORMATION NETWORK ANALYSIS

COURSE INSTRUCTOR: SEEMA RANI MAX. TIME: 1 Hour

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of calculators is not allowed

Q.No	Question	CO	Marks
Q1	During a company restructuring, an internal document passes through employees in the following order: HR → Manager → Lead → Manager → Developer → Lead Classify this process as walk, trail,path with justification.	[CO2]	[3]
Q2	You are asked to study how layoffs affect knowledge flow in an organization using a survey-based network study. Define nodes, ties, and boundary for this study with One survey question and identify cutpoints in the network.	[CO1]	[2]
Q3	Answer the Following: $$\begin{array}{c|ccccccccc} & A & B & C & D & E & F & G & H & I \\ A & 0 & 1 & 1 & 1 & 1 & 0 & 0 & 0 & 0 \\ B & 1 & 0 & 1 & 1 & 1 & 0 & 0 & 0 & 0 \\ C & 1 & 1 & 0 & 1 & 1 & 0 & 0 & 0 & 0 \\ D & 1 & 1 & 1 & 0 & 1 & 0 & 0 & 0 & 0 \\ E & 1 & 1 & 1 & 1 & 0 & 1 & 0 & 0 & 0 \\ F & 0 & 0 & 0 & 0 & 1 & 0 & 1 & 1 & 1 \\ G & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 1 & 1 \\ H & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 1 \\ I & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 1 & 0 \end{array}$$ Draw network graph Identify Cut points Identify Bridges Independent Path	[CO2]	[4]

150

Q4	Given the graph V = {1, 2, 3, 4} E = {1-2, 2-3, 3-4, 1-4} Which of the following sequences are valid paths? 1. $1 \rightarrow 2 \rightarrow 3 \rightarrow 4$ 2. $1 \rightarrow 4 \rightarrow 3 \rightarrow 2 \rightarrow 1$ 3. $1 \rightarrow 2 \rightarrow 3 \rightarrow 2 \rightarrow 1$ 4. $4 \rightarrow 3 \rightarrow 2$ (a) Identify all valid paths. (b) What is an Ego-Centered Network? How is it different from triadic , dyadic and whole types of social networks?	**[CO2]**	**[2+2]**
Q5	Explain Granovetter's Strength of Weak Ties (SWT) theory. How do weak ties contribute to the diffusion of information?	**[CO1]**	**[2]**