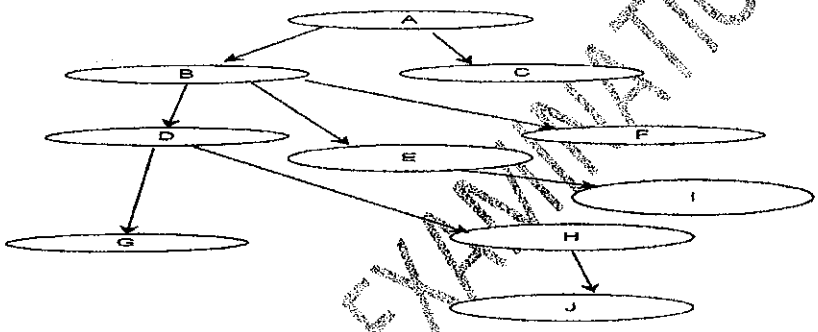
JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATION- 2025
B.Tech-III Semester (CSE/IT)

COURSE CODE (CREDITS): 25B11CI313 (3) MAX. MARKS: 35
COURSE NAME: DATABASE MANAGEMENT SYTEMS
COURSE INSTRUCTORS: {Pardeep, Ekta, Amol, Pankaj, Nitika, Gaurav} MAX. TIME: 2 Hours

Note: (a) All questions are compulsory.
(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems
(c) Give step by step answer of each questions

Q.No	Question	CO	Marks
Q1	Consider that Database Administrator (DBA) would like to implement the following security policy as per MAC (Mandatory Access Control Protocol) in the database of an organization: Users (U1, U2 and U3) can access the files (F1, F2 and F3). The clearance level of users is: U1 (2-Confidential), U2 (4- Top Secret) and U3 (1- Public). The files are classified as F1 (1-Public), F2 (2- Confidential) and F3(4-Top Secret). Answer whether the access to the following attempts will be granted or denied (a) U1 would like to access F3 (b) U2 would like to access F1 (c) U3 would like to access F2 (d) U3 would like to access F3 (e) U2 would like to access F3 (f) U3 would like to access F1	6	6
Q2	Consider the schedule S of transactions T1 and T2: T1: R(a), W(a) T2: W(a), W(a) Apply conflict serializable method to find out serializable schedule. If conflict serializable schedule doesn't exist then find out serializable schedule corresponding to S using view serializable method.	5	5
Q3	Consider the schedule S of transactions T1 and T2: T1: Lock S(A), Lock X(B), Unlock (A), Unlock (B) T2: Lock X(A), Lock X(D), Unlock (A), Unlock (D) Apply the two phase locking protocol (2 PL) and show the resultant schedule S_1. Also find the serial schedule corresponding to S_1.	5	5

Q4	Consider the set of transactions in Schedule S as per the details below: T1 T2 T3 T4 Lock X(B) Lock X(D) Lock X(H) Unlock (D) Lock X(E) Lock X(D) Unlock (B) Unlock (E) Lock X(B) Lock X(E) Unlock (H) Lock X(G) Unlock (D) Lock X(D) Lock X(H) Unlock (D) Unlock (H) Unlock (E) Unlock (B) Unlock (G) The database graph for the execution of S is given as under:  Apply graph based locking protocol for the execution of S on the above database graph and report problem if any.	5	7
Q5	Consider the schedule of transactions S given as under: T1 (TS:400) / T2(TS: 500) / T3 (TS: 600) R(A) R(B) W(C) R(B) R(C) W(B) W(A) Apply basic time stamp ordering protocol on S and show the transactions execution.	5	7
Q6	Consider the set of transactions along with data items given as under: Transactions / Data Items / Locks T1 / Q / Exclusive T2 / P,Q / Exclusive T3 / Q / Exclusive T4 / P / Exclusive T5 / R / Exclusive T6 / R, Q / Exclusive T7 / P, R / Exclusive Draw the weight for graph for the above set of transactions. Is there a deadlock?	5	5