11/11·30

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

B.Tech-III Semester (CSE/IT)

COURSE CODE (CREDITS):25B11CI313 (3) MAX. MARKS: 25

COURSE NAME: DATABASE MANAGEMENT SYSTEMS

COURSE INSTRUCTORS:{Pardeep, Ekta, Amol, Pankaj, Nitika, Gaurav} MAX. TIME: 1 Hour 30 Min

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

Q.No	Question	CO	Marks
Q1	A database of research articles in a journal uses the following schema J(Volume, Number, Startpage, Endpage, Title, Year , Price). The following functional dependencies exist in the schema: Volume, Number, Startpage, Endpage→Title, Volume, Number→Year, Volume, Number, Startpage, Endpage→Price. The database is redesigned to use the following schemas, J1(Volume, Number, Startpage, Endpage, Title, Price) and J2(Volume, Number, Year). Which is the weekest normal form that the new database satisfies but the old one does not by considering the given function dependencies.	4	4
Q2	Consider the employee relational schema given as under: E-No | E-Name | E-Department 1 | Ram | CSE, IT 2 | Shyam | ECE 3 | Sita | CSE, CE What is the highest normal form of the given relation? Convert the given student relation into its next immediate normal form? What would be the primary key in your converted relation?	3	3
Q3	Consider the relation R(A,B,C,D,E,F) and Functional dependency set: {AB→C, C→DE, E→F, D→A, C→B}. Find all the candidate keys, prime and non prime attribute set for the given relation R.	4	4
Q4	Consider the relation R(A,B,C,D,E) and functional dependency set : { A→BCDE, BC→ACE, D→E}. Find out the highest normal form in the relation starting checking from lowest normal to highest one.	4	5
Q5	Consider the relation R(A,B,C,D,E) and Functional dependency set F: { A→BCD, B→AE, BC→AED, D→E, C→DE}. Let the back end engineer decompose R into R1(AB), R2(BC) and R3(C,D,E). Check the decomposition for dependency preserving and lossless join.	4	4
Q6	Consider the relation R(A,B,C,D) and Functional dependency set F: { A→B, C→D}. What is the highest normal form of the given relation R? Convert the relation R into its immediate next higher normal form.	4	5