JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

B.Tech-3rd Semester (BT/BI)

COURSE CODE (CREDITS): 20B11BI311 (3) MAX. MARKS: 25

COURSE NAME: BIOINFORMATICS DATA MANAGEMENT

COURSE INSTRUCTORS: Dr. Pankaj Dhiman MAX. TIME: 1 Hour 30 Minutes

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

(b) *The candidate is allowed to make Suitable numeric assumptions wherever required*

for solving problems

Q.No	Question	CO	Marks
Q1	Consider a relation schema R (A , B , C , D) with the functional dependencies $A \rightarrow B$ and $C \rightarrow D$. Determine whether the decomposition of R into R_1 (A , B) and R_2 (C , D) is lossless or lossy.	[CO-4]	5
Q2	The following functional dependencies hold true for the relational scheme R (W , X , Y , Z) – $X \rightarrow W$ $WZ \rightarrow XY$ $Y \rightarrow WXZ$ Write the irreducible equivalent for this set of functional dependencies.	[CO-4]	5
Q3	Consider a relation- R (A , B , C) with the functional dependencies- $A \rightarrow B$ $B \rightarrow C$ $C \rightarrow A$ Find the Candidate Key from the relation.	[CO-4]	5
Q4	What are the conditions for a table to be in Third Normal Form (3NF)? Explain the concept of transitive dependency.	[CO-4]	5
Q5	How do set operations in relational algebra differ from standard set operations in mathematics? Provide examples	[CO-3]	5