

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-2 EXAMINATIONS-2022

B.Tech-III Semester (BI)

COURSE CODE (CREDITS): 20B11BI311 (4)

MAX. MARKS: 25

COURSE NAME: Bioinformatics Data Management

COURSE INSTRUCTORS: Dr. Shikha Mittal

MAX. TIME: 1 Hour and 30 Minutes

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q1. Consider the table to answer the queries – [CO-1 & CO-2] (3 marks)

Table Employee

EmpID	FullName	ManagerID	DateofJoining	City
121	John snow	321	01/31/2014	Toronto
321	Walter white	986	01/20/2015	California
421	KuldeepRana	876	27/11/2016	New Delhi

Table EmployeeSalary

EmpID	FullName	ManagerID	DateofJoining	City
121	John snow	321	01/31/2014	Toronto
321	Walter white	986	01/20/2015	California
421	KuldeepRana	876	27/11/2016	New Delhi

- Write an SQL query to fetch the EmpID and FullName of all the employees working under Manager with id -- '986'.
- Write an SQL query to fetch the different projects available from the EmployeeSalary table.
- Write an SQL query to find the maximum, minimum, and average salary of the employees.

Q2. How is the pattern matching done in the SQL? [CO-2] (3 marks)

Q3. To design a nucleotide sequence database, several types of constraints are needed. Explain the constraints that will be required for the database design. [CO-4] (4 marks)

Q4. Given a relation R (A, B, C, D) and Functional Dependency set $FD = \{ AB \rightarrow CD, B \rightarrow C \}$, determine whether the given R is in 2NF? If not convert it into 2 NF. [CO-3 & CO-4] (4 marks)

Q5. Explain the following – [CO-1, CO-2 & CO-4] (6 marks)

- a) If an attribute doesn't have any value, would you assign it a blank space, a ZERO or a NULL value?
- b) What do you understand by functional dependency and transitive dependency in DBMS?
- c) Which abstraction level would you provide to the users who are not developers and system admins?

Q6. Normalization is a process of organizing the data in the database. Different types of normal forms are used in database management systems. Explain these forms with examples and what the anomalies in database are. [CO-4] (3 marks)

Q7. Data security is always an important concern while creating a database. What are the different methods that can be used for database security? [CO-7] (2 marks)