JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

B.Tech-III Semester (BT/BI)

COURSE CODE (CREDITS): 25B11BI312 (3) **MAX. MARKS: 25**

COURSE NAME: Bioinformatics data management

COURSE INSTRUCTORS:Dr. Shikha Mittal **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

<table>
<tr><th>Q.No</th><th>Question</th><th>CO</th><th>Marks</th></tr>
<tr><td>Q1</td><td>Write an SQL query to create a table named Students with the following columns:
• StudentID (integer, primary key)
• Name (varchar(50), not null)
• Department (varchar(30))
• DOB (date)
Insert the following records into the Students table:
<table><tr><th>StudentID</th><th>Name</th><th>Department</th><th>DOB</th></tr><tr><td>1</td><td>Rahul Sharma</td><td>CSE</td><td>2002-05-14</td></tr><tr><td>2</td><td>Priya Mehta</td><td>Biotech</td><td>2001-08-20</td></tr><tr><td>3</td><td>Aman Gupta</td><td>CSE</td><td>2002-12-30</td></tr></table>a. Write a query to display all students from the “CSE” department.
b. Retrieve all students whose name starts with ‘P’.
c. Write a query to sort students by their name in descending order.
d. Write a query to update the department of student Aman Gupta to ‘ECE’.
e. Add a new column Email to the Students table.</td><td>[III]</td><td>(6)</td></tr>
<tr><td>Q2</td><td>Explain the different types of attributes and keys used in DBMS.</td><td>[II, III]</td><td>(4)</td></tr>
<tr><td>Q3</td><td>Design an E–R diagram for a University Database to manage:
• Students, Courses, Faculty, Departments, and Enrollments.
• Include attributes and relationship types.</td><td>[III]</td><td>(4)</td></tr>
<tr><td>Q4</td><td>What are cardinalities (mapping constraints) in relationships with examples?</td><td>[III]</td><td>(3)</td></tr>
<tr><td>Q5</td><td>Explain in brief –
a. Strong and Weak entity
b. aggregate functions in SQL
c. differentiate between Cartesian product and join</td><td>[I,II, III]</td><td>(3)</td></tr>
</table>

Q6	**Write the output of the following queries –** **Given Relation:** EMP(EmpID, Name, Dept, Salary) **a.** σ(Salary > 40000)(EMP) **b.** π(Name)(σ(Dept='HR' ∧ Salary > 35000)(EMP)) **c.** π(Dept, AVG(Salary))(EMP) GROUP BY Dept	[III]	(3)
Q7	**a.** What is data independence? Explain logical and physical data independence. **b.** What is the difference between DELETE, and DROP?	[I,II]	(2)

EmpID	Name	Dept	Salary
1	Ravi	HR	30000
2	Meena	IT	50000
3	Ajay	HR	40000
4	Reeta	IT	60000