



**NATIONAL INSTITUTE OF TECHNOLOGY PATNA**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**MID-SEMESTER EXAMINATION, OCTOBER 2022**

**BTech: 3<sup>rd</sup> Semester**

**Course Name: Database Management Systems**

**Maximum Time: 2 hours**

**Course Code: CS34109**

**Maximum Marks: 30**

Answer all questions & sub-questions must be answered sequentially in one place

Q.No.	Question	Marks
1	<p>a) What are the different facilities provided by the Database Management Systems? Explain each of them in brief.</p> <p>b) There are four distinct types of people that participate in the DBMS environment. Who are they? Also, explain in brief the role of each people.</p>	5
2	<p>a) The following ER diagrams represent two views of a video store database as described by a database designer. Show how the two views can be integrated in the simplest and most useful way by making all necessary changes to the two diagrams. State any assumptions you need to make.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><b>EMPLOYEE VIEW</b></p> </div> <div style="text-align: center;"> <p><b>CUSTOMER VIEW</b></p> </div> </div> <p>b) Construct the ER / EER diagram of the following scenarios with required constraints and map it into the logical schema and also transform it into SQL.</p> <ol style="list-style-type: none"> <li>Employees can use different skills on any one of many projects, and each project has many employees with various skills. Attributes of employee (empid primary key, empname), skill (skilltype primary key), and project (projectname primary key).</li> <li>An individual may be either an employee or a customer, or both, or neither. Attributes of Individual (individ primary key, indivname, indivaddr), Employee (empid primary key, jobtitle), and Customer (custno primary key, custcredit).</li> </ol>	4
3	<p>Consider the following schema and write the query Q1, Q2, and Q3 in domain relational calculus, and SQL. Whereas writing the query Q4 and Q5 only in SQL using UNION / INTERSECT clauses.</p> <p>Sailors(sid, sname, rating, age)  Reserves(sid, bid, day)  Boats(bid, bname, color)</p> <p>Q1. Find all sailors with a rating above 7.  Q2. Find the names of sailors who have reserved boat number 103.  Q3. Find the names of sailors who have reserved a red boat.  Q4. Find the names of sailors who have reserved a red or a green boat.  Q5. Find the names of sailors who have reserved both a red and a green boat.</p>	10

*Wish you all the best*