JHARKHAND Rai University
RANCHI

**End Semester/Reappear (Semester III) Examination December, 2024**

**Programme: BCA**

**Course: Database Management System** **Full Marks: 70**

**Course Code: 3CCC202** **Time: 3 Hrs.**

**Enrolment no. _____**

| Q. No. | Questions | CO | Bloom Taxonomy Category | Marks |
|---|---|---|---|---|
| | **Section I** | | | |
| 1 | **Short Answer type questions** | | | **4 x 5 = 20** |
| a | Illustrate Instances and schemas of database with suitable example(s). | CO1 | Analyze | |
| | or | | | |
| | Illustrate domain, degree and cardinality of a relation with suitable example(s). | CO1 | Analyze | |
| b | Explain the concept of a "parent record" and a "child record" in the network model. Provide an example to illustrate the concept. | CO2 | Analyze | |
| | or | | | |
| | Illuminate the concept of data abstraction. | CO2 | Understand | |
| c | Explain the importance of Null values in Relational Model. | CO3 | Understand | |
| | or | | | |
| | Illustrate the concept of transitive functional dependency with suitable example. | CO3 | Analyze | |
| d | Elaborate the reason(s) for the need of concurrency control in DBMS. | CO4 | Understand | |
| | or | | | |
| | Write short notes on: i. a. Distributed database ii. Multimedia database | CO4 | Remember | |
| | **Section II** | | | |
| **Long Answer type questions** | | | | **3 x 10 = 30** |
| 2 | Provide an analytical view of the types of Relationship that exist in ER Model along with suitable diagrams | CO3 | Analyze | |
| | or | | | |
| | Discuss all the four types of integrity constraints in DBMS using suitable example for each one. | CO3 | Understand | |
| 3 | Write short notes on a. Domain Relational Calculus b. Tuple Relational Calculus. Provide examples for each one. | CO2 | Understand | |
| | or | | | |
| | Explain DBTG CODASYL model and their data retrieval facility with diagram. | CO2 | Analyze | |
| 4 | Discuss the role of ACID properties in DBMS transactions. Provide suitable example for each of the properties. | CO4 | Analyze | |
| | or | | | |
| | Evaluate the advantages & disadvantages of Timestamp-based concurrency control. | CO4 | Evaluate | |
| | **Section III** | | | |
| | **Application based questions** | | | |
| 5 | a. Draw an E-R diagram of University Information System.<br>b. On the basis of the tables given hereunder, answer the questions that follow.<br>Table 1: EmployeeInfo Table<br>Table 2: EmployeePosition Table | CO3 | Analyze | **1 x 20 = 20** |

| EmpID | EmpFname | EmpLname | Department | Project | Address | DOB | Gender |
|---|---|---|---|---|---|---|---|
| 1 | Sanjay | Mehra | HR | P1 | Hyderabad | 01/12/1976 | M |
| 2 | Ananya | Mishra | Admin | P2 | Delhi | 02/05/1968 | F |
| 3 | Rohan | Diwan | Account | P3 | Mumbai | 01/01/1980 | M |
| 4 | Sonia | Kulkarni | HR | P1 | Hyderabad | 02/05/1992 | F |
| 5 | Ankit | Kapoor | Admin | P2 | Delhi | 03/07/1994 | M |

| EmpID | EmpPosition | DateOfJoining | Salary |
|---|---|---|---|
| 1 | Manager | 01/05/2022 | 500000 |
| 2 | Executive | 02/05/2022 | 75000 |
| 3 | Manager | 01/05/2022 | 90000 |
| 2 | Lead | 02/05/2022 | 85000 |
| 1 | Executive | 01/05/2022 | 300000 |

| | | | | |
|---|---|---|---|---|
| | Write SQL query statement<br>i. to get the current date.<br>ii. to find the names of employees that begin with 'S'<br>iii. to find all the employees whose salary is between 50000 to 100000.<br>iv to fetch details of all employees excluding the employees with first names, "Sanjay" and "Sonia" from the EmployeeInfo table.<br>v. to find the third-highest salary from the EmpPosition table.<br>vi. to fetch details of employees with the address as "DELHI(DEL)". | | | |
| | or | | | |
| | Explain the need of database Recovery Techniques used in DBMS.Analyze the two types of recovery techniques used in dbms. | CO3 | Analyze | |

**COURSE OUTCOME**

At the end the course the candidate will able to

CO1: Demonstrate the basic elements of a database management system.

CO2: Identify the data models for relevant problems.

CO3: Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respective data into RDBMS and formulate SQL queries on the data.

CO4: Demonstrate their understanding of key notions of query evaluation and optimization techniques.