Seat No:_____ **Enrolment No:_____**

LOK JAGRUTI KENDRA UNIVERSITY
MCA Semester – 1 Winter2023 Exam

Subject Code: 140110103 **Date: 06/11/2023**

Subject Name: Relational Database Management System (RDBMS)

Duration: 02:30 Hours **Total Marks: 50**

Instructions:

1. Attempt all the questions
2. Figures on the right indicate the marks.
3. Draw the figures and give suitable examples as and where necessary.

Q - 1 Answer The Following Questions.

1.	Give any 4 names of relational database management systems.	1
2.	Define the term: System Catalog	1
3.	List different types of database users	1
4.	What are the characteristics of the database approach? Explain any 3 in brief.	3
5.	Draw a database system architecture in detail.	4
	OR	
5.	List down any four advantages of using Three-Tier Architecture.	4

Q - 2 Answer The Following Questions.

6.	Define: Super Key, Alternate Key	1
7.	Mention 4 different types of attributes of an Employee entity.	1
8.	Explain participation constraint for any binary relationship type.	1
9.	Explain the mapping of 1:N relationship type to a relational model. Take an example of a project is assigned to many employees in an organisation.	3
10.	Draw an E-R Diagram for the following: A bus company owns a number of buses. Each bus is allocated to a particular route. Although some routes may have several buses, each route passes through a number of towns. One or more drivers are allocated to each stage of a route, which corresponds to a journey through some or all of the towns on a route. Some of the towns have a garage, where buses are kept and each of the buses are identified by the registration number and can carry different numbers of passengers, since the vehicles vary in size and can be single or double decked, each route is identified by a route number and information is available on the average number of passengers carried per day	4

for each route. Drivers have an employee number, name, address and sometimes a telephone number.

OR

10. Store has many branches, pharmacist as an employee in it. Drug manufacturing company supplies drugs at different branches. Patient come with a doctor's prescription. Pharmacist sell drugs. The store manages information relate to the doctor, the patient as a customer, the manufacturer and the pharmacist as an employee in a branch. 4

Q - 3 Answer The Following Questions.

11. Define "Multivalued Functional Dependency" with appropriate example 1

12. Define any two Armstrong's axioms/properties of functional dependencies. 1

13. Define Codd's "Foundation Rule" and "Information Rule" for a database to be the correct RDBMS. 1

14. What is Normalization? Explain 1NF, 2NF with suitable example. 3

15. What is Anomalies? Define Insert, Update and Delete Anomalies with suitable example. 4

OR

15. Consider the following relation and its functional dependencies. Assume that the relation is in 1NF and convert the relation in 2NF and 3NF with the rules for each decomposition. 4

R = {Proj#, Proj_Name, Emp#, Emp_Name, Job_Class, Chg_Per_Hr, Hours}

FD1: {Proj#, Emp#} -> Hours

FD2: {Job_Class} -> {Chg_Per_Hr}

Q - 4 Answer The Following Questions.

16. Write and explain any two aggregate functions in SQL 1

17. Write a full syntax (with all options) to change the structure of the table. 1

18. What are the advantages of creating view? 1

19. Explain different types of JOIN with suitable example of any one type of join. 3

20. Consider following relation and write SQL statements to solve given queries: 4

Teacher(ID, name, dept_name, salary, Course_name, Semester)

1. Find all teachers whose salary is greater than 40,000.
2. Find the teachers of department 'Computer Science'.
3. List the courses taught by the teachers of Semester-2.
4. Find the department where course 'DBMS' is taught.

OR

20. Use the following tables and solve below given queries. 4

Course (CourseID, Cname, Duration)

Student (StudentId, Sname, DOB, Pincode, City)

Admission (StudentID, CourseId, Fees, date)

1. Give name of student who have taken admission in 'MCA' Course. [1]

2. Write a query to display course wise number of students enroll [1]

3. Create a query to display the name and fees paid date of all students those who have paid the fees after month of 'July'. [2]

Q - 5 Answer The Following Questions.

21. Explain %TYPE parameter used in PLSQL blocks with example. 1

22. What are the mandatory and optional sections of any PLSQL block? 1

23. Write a syntax to create a trigger. 1

24. Explain Iterative Control statements used in PLSQL block. Write correct syntax and appropriate example for any one. 3

25. Write a PLSQL block to calculate the bonus of each employee of "Sales" department which is based on the 5% of their salary. If the salary in less than 25000, then raise the exception. 4

OR

25. What is a subprogram? Mention any two advantages and one limitation of creating a subprogram in PLSQL 4

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