

**1C8114****M.C.A. I - Sem. (Main / Back) Exam., - 2023  
MCA – 105 Database Systems****Time: 3 Hours****Maximum Marks: 70  
Min. Passing Marks: 28***Instructions to Candidates:*

**Attempt all ten questions from Part A. All five questions from Part B and three questions out of five from Part C.**

*Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.*

*Use of following supporting material is permitted during examination.  
(Mentioned in form No. 205)*

1. NIL2. NIL**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

-  Q.1 What is file system?
-  Q.2 What is checkpoint?
-  Q.3 Define data dictionary.
-  Q.4 What do you mean by “Wait for graph” in deadlock?
-  Q.5 What is catastrophic failure?
-  Q.6 Explain set difference operation.
-  Q.7 What do you understand with the term “shadow paging”?
-  Q.8 Explain PL/SQL cursors.
-  Q.9 Why set operations are used? Name all types of set operations.
-  Q.10 How many types of SQL commands are there? Name them.

## PART - B

[5×4=20]

### (Analytical/Problem solving questions)

Attempt all five questions

Q.1 Explain 3 Tier Architecture of DBNS in detail.

Q.2 Explain serializability in transaction in detail.

Q.3 What is relational calculus? Explain its types.

Q.4, What is a failure? Explain “Log Based Recovery” in detail.

Q.5 What is a PL/SQL Block? Explain with example.

## PART - C

[3×10=30]

### (Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

Q.1 What is Normalization? Explain all types of normal forms.

Q.2 (a) What is Deadlock? Explain deadlock detection & deadlock prevention.

(b) Write short note on ACID property.

Q.3 What is concurrency execution? How you can maintain the concurrency of the database using some concurrency protocols? Explain.

Q.4 Using the following tables write the SQL statements -

Employee (Emp\_no, Name, Deptno, Job, Salary) department (Deptno, Dname, Location) Enter 5 records in both of the table.

(a) List department wise no. of employees.

(b) Display distinct job in the company.

(c) List Emp\_no, name, Dname & Salary for each department

(d) List Emp\_no, name, Salary for production department.

(e) Display list of employees getting maximum salary.

Q.5 (a) Write short notes on -

(i) OODBMS & ORDBMS

(ii) Distributed Database & Multimedia Database.

(b) What are the limitations of conventional databases and advantages of emerging databases?

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