

**FACULTY OF INFORMATICS**  
**MCA 2 Year Course - II Semester (Supply) Examination, April 2022**

**Subject: Data Base Management System**

**Time: 3 Hours**

**Max. Marks: 70**

**(Missing data, if any, may be suitably assumed)**

**Note: Answer any five questions from the following.**

**All questions carry equal marks.**

- 1 (a) Explain the Database Architecture with the help Diagram.  
(b) Write about Extended ER features?
- 2 (a) What is Database Management system? What are its advantages?  
(b) Define Entity? Differentiate between Strong entity and weak entity?
- 3 (a) What is Relational Algebra? Explain its two fundamental operations?  
(b) What are Aggregate functions? Give syntax for each Function.
- 4 (a) Give the Basic structure of SQL queries.  
(b) Explain Null Values in SQL with a suitable example.
- 5 (a) Define Functional Dependency. What are trivial and non-trivial functional dependency with examples?  
(b) What is normalization? Why do we need normalization?
- 6 (a) Elaborate 1 NF and 2 NF?  
(b) What are the features of a good Relational Database Design?
- 7 (a) Differentiate between static hashing and dynamic hashing?  
(b) How insertion and deletion performed in B+ trees?
- 8 (a) Define Transaction. Explain its properties?  
(b) With the help of diagram explain Life cycle of a transaction.
- 9 (a) What is concurrent execution of transaction? What are the problems of concurrent execution?  
(b) Differentiate between SQL and NOSQL.
- 10 (a) Illustrate 2PL and Strict-2PL.  
(b) What is Deadlock and what are the necessary and sufficient conditions to occur dead lock in DBMS?

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