

**CERTIFICATE IN MOBILE
APPLICATION DEVELOPMENT
(CMAD)**

Term-End Examination

June, 2025

BCS-092 : INTRODUCTION TO DATABASES

Time : 3 Hours

Maximum Marks : 75

Note : *Question No. 1 is compulsory. Attempt any **three** questions from the rest.*

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1. (a) What is a data model ? Explain any *two* types of database model. 10
 - (b) Explain the terms Data Isolation and Data Integrity. 5
 - (c) ABC university is reputed state university that maintains the students details, the faculty details and projects carried out by the faculty. Each faculty

can have several research interests. A faculty can supervise multiple projects but a project is supervised by only one faculty. Each student can be registered to only one department and also is assigned to at least one project.

- (i) List possible entities and attributes. 2
 - (ii) Identify the relationships between entities. 2
 - (iii) Make E-R diagram for the system. 3
 - (iv) Identify primary key/foreign keys for the system. 3
 - (d) What is Business Rule ? How is the business rule related to connectivity and cardinality ? 5
2. (a) Explain various components of a database system. 5
- (b) Why the file-based system is not considered good when compared with DBMS ? Explain. 5

- (c) Write SQL commands for the following table creation : 5

EMPLOYEE (id, fname, lname, dept_id, manager_id salary, expertise)

DEPARTMENT (dept_id, deptname, dept location)

Consider the following constraints :

- (i) Employee id should start from 'e' for example : e101, e102
 - (ii) Department location can only be 'DELHI', 'MUMBAI' or 'UTTAR PRADESH'. Make assumptions for appropriate data types.
3. (a) What is the need of outer join ? Explain with the help of examples. 5
- (b) What are database anomalies ? Explain various types of anomalies in databases. 5
- (c) Explain the terms primary key, partial key, alternate key, super key and candidate key. 5

4. (a) Consider the following table : 6
MEMBER (Mem_num, Mem_name,
Mem_address, Mem_city, Mem_state,
Mem_zip).
(i) Find functional dependencies
(ii) Normalise till 3NF.
Make and state suitable assumptions, if
any.
- (b) Explain the difference between DDL
and DML statements. Write SQL
syntax of any *two* DDL & DML
statements. 5
- (c) Explain GRANT and REVOKE
commands. 4
5. Explain the following with examples/
diagrams : 3×5=15
(a) Weak and strong entity
(b) Multivalued and derived attributes
(c) GROUP BY clause and ORDER BY
clause in SQL

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