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BCS–092

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.*

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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