

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

**Term-End Examination**

**December, 2025**

**BCS-092 : INTRODUCTION TO DATABASES**

*Time : 3 Hours*

*Maximum Marks : 75*

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**Note :** (i) *Question No. 1 is compulsory.*

(ii) *Attempt any **three** questions from  
the rest.*

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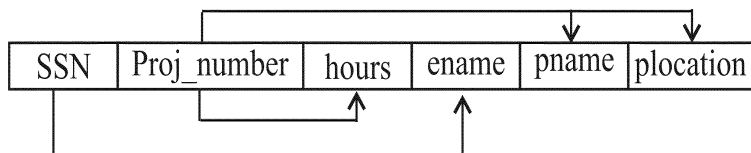
1. (a) What is Data Abstraction ? How can it  
be achieved using databases ? 5
- (b) What is a view ? What are the  
constraints when you try to insert  
update or delete data using views ? 5

- (c) XYZ Publishing House prints books on various subjects. Authors of books expertise in only one field of study. The company has book editors who are responsible for book editing. Shop owners can buy multiple books from the company. The publishing house purchases publishing material from several suppliers.
- (i) List all entities and attributes. 2
  - (ii) Identify relationships. 2
  - (iii) Find possible keys in relations. 3
  - (iv) Make E-R diagram. 3
- (d) Explain optional and mandatory relationships with examples. 5
- (e) Explain the need of normalization. 5
2. (a) Consider the following tables : 8
- MP (empno, ename, sal, job, mgr, hiredate, deptno, comm., birthdate).
- DEPT (deptno, dname, Loc)
- SALGRADE (grade, losal, hisal)

Write SQL queries for the following :

- (i) Display total salary given to employees of department number 10.
  - (ii) Display names of employees who have alphabet 'a' in their name.
  - (iii) Display employee name, their department name along with salary grade of employees working in either department 10 or 20.
  - (iv) Display average salary given to employees in every department.
- (b) What is the difference between SDLC and Database Life Cycle ? 4
- (c) Explain the concept of data independence. 3
3. (a) Explain the TABLE constraints that can be defined on any relation with the help of an example. 10
- (b) Explain any *five* data types used in SQL. 5

4. (a) Consider the following dependency diagram : 6



- (i) List the types of functional dependencies shown in diagram.
  - (ii) Normalize till 3NF.
- (b) Explain ALTER command with examples. 4
- (c) Explain the advantages of relational model over hierarchical or network data model. 5
5. Explain the following with example/ diagram : 5×3=15
- (a) Lossless join
  - (b) Outer join
  - (c) Derived attribute
  - (d) Aggregate functions
  - (e) GROUP BY clause

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