Roll No. : .....

Total No. of Questions : **11**] [Total No. of Printed Pages : **4**

PSJA–2024

M.Sc. (IInd Semester) Examination, June–2025

COMPUTER SCIENCE

Paper - MSC–6.5 DCCT–203

(Data Base Management System)

Time : 3 Hours] [*Maximum Marks : 80*

The question paper contains three Sections.

Section–A **(Marks : 1 × 10 = 10)**

Note :– Answer all *ten* questions. Questions (i) to (v) are multiple choice questions, while questions (vi) to (x) are fill in the blank questions. Each question carries **1** mark.

Section–B **(Marks : 5 × 5 = 25)**

Note :– Answer all *five* questions. Each question has internal choice (Answer limit **150** words). Each question carries **5** marks.

Section–C **(Marks : 15 × 3 = 45)**

Note :– Answer any *three* questions out of five (Answer limit **400** words). Each question carries **15** marks.

Section–A

1. (i) Which of the following is not a characteristic of the databse approach ?

(a) Data redundancy

(b) Data abstraction

(c) Data integrity

(d) Data inconsistency

(ii) Which normal form eliminates transitive dependency ?

(a) 1NF

(b) 2NF

(c) 3NF

(d) BCNF

(iii) Which SQL command is used to remove a table from a database ?

(a) DELETE

(b) REMOVE

(c) DROP

(d) TRUNCATE

(iv) Two-phase locking protocol is used to :

(a) Increase disk space

(b) Avoid deadlock

(c) Ensure serializability

(d) Speed up transactions

(v) Which of the following is a deadlock prevention protocol ?

(a) Wait-die

(b) Two-phase commit

(c) Timestamp ordering

(d) Both (a) and (c)

(vi) A database ..... is a collection of interrelated data and a set of programs to access that data.

(vii) ..... is the process of organizing data to reduce redundancy and improve integrity.

(viii) SQL command used to add new rows to a table is ..... .

(ix) The property of transactions that ensures all-or-none execution is called ..... .

(x) A database ..... is a subject-oriented, interrated, time-variant and non-volatile collection of data.

Section–B

2. Explain the advantages of the database approach compared to the file system approach.

Or

Define E-R Model and explain its components with an example.

3. What is 1NF, 2NF and 3NF in normalization ? Give suitable examples.

Or

Differentiate between Primary Key, Super Key, Candidate Key and Foreign Key with examples.

4. Explain Relational Algebra operations : Union, Intersection and Difference.

Or

Describe the different types of SQL statements with examples.

5 What are Stored Procedures in SQL ? State their advantages.

Or

Define Transactions and explain the ACID properties with examples.

6 Explain the concept of Concurrency Control and its importance.

Or

Write a short note on Data Warehousing and its applications.

Section–C

7 Discuss the characteristics, advantages and architecture of database systems in detail.

8 Describe in detail the Normalization process and explain up to BCNF with suitable examples.

9 Explain SQL commands (DDL, DML, DCL, TCL) with syntax and examples.

10 Discuss the properties of transactions, serial and non-serial schedules and serializability in detail.

11 Explain Concurrency Control techniques : Two-phase locking, Timestamp ordering and Deadlock handling.