Roll No. ..

12588

M. Tech. 1st Semester (Regular/Re-appear/Improvement/Mercy Chance) Examination – December, 2025

ADVANCED DATABASE MANAGEMENT SYSTEM (CSE New)

Paper : MCSE-103

Time : Three Hours] ***[Maximum Marks : 100***

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Question No. **1** is ***compulsory***. Attempt any ***four*** questions from the rest taking ***one*** question from each Unit. Each question carries equal marks.

1. Answer ***all*** parts : $8 \times 2.5 = 20$

   (a) What are the advantages and disadvantages of using a relational database system ?

   (b) Define query processing. What role do statistics play in query optimization ?

   (c) What is the purpose of logging in DBMS recovery mechanisms ?

   (d) Explain the concept of serializability in concurrency control.

   (e) What is an object query language (OQL), and how is it used in object-oriented databases ?

   (f) Give two advantages of distributing a database in a distributed DBMS environment.

   (g) What is a data warehouse, and what are its key components ?

   (h) Explain the main advantage of an object-relational database approach over traditional relational databases.

UNIT – I

2. (a) Explain the architecture of a Database Management System (DBMS). Discuss its main components and their functions. 10

(b) Describe the relational model in detail with examples. 10

3. (a) Discuss the importance of SQL in database systems. Give examples of basic SQL queries and their uses. 10

(b) Differentiate between different types of Normal forms. 10

UNIT – II

4. (a) Explain the concept of reliability in a DBMS. How does it relate to transaction management and system recovery ? 10

(b) Explain different types of locks and how they prevent conflicts in concurrent transactions. 10

5. (a) Discuss the various types of transactions in a centralized DBMS. 10

(b) Explain conflict and view serializability with examples. 10

UNIT – III

6. (a) Discuss the key features of object-oriented databases. 10

(b) What are the different options for distributing a database in a distributed DBMS ? 10

7. (a) Describe the process of creating object instances in an object-oriented database. How are object identifiers (OIDs) assigned and used ? 10

(b) Explain the architecture of a distributed DBMS. 10

UNIT – IV

8. Explain the concept of a data warehouse. Discuss its basic features, objectives, and the key differences between a data warehouse and a traditional operational database. 20

9. Describe the user interface in a data warehouse. Explain how end-users interact with the data warehouse for querying, reporting, and analysis, and discuss the importance of usability in decision support systems. 20