



Fifth Semester B.E./B.Tech. Degree Examination, June/July 2025

Database Management Systems

Time: 3 hrs

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.**Module-1**

- 1 a. Discuss the advantages of database management approach over file processing system. (04 Marks)
- b. Describe the characteristics of database approach. (08 Marks)
- c. Explain three schema architecture and reason for need of mapping among schema level. (08 Marks)

OR

- 2 a. With a neat diagram, explain the component modules of DBMS and their interactions. (08 Marks)
- b. Define the following terms with examples :
 - i) Super key
 - ii) Candidate key
 - iii) Primary key. (06 Marks)
- c. Construct an ER diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. (06 Marks)

Module-2

- 3 a. Describe the three main categories of constraints on database. Explain with example. (10 Marks)
- b. Given the schema :
 Passenger (pid, pname, pgender, pcity)
 Agency (aid, aname, acity)
 Flight (fid, fdate, time, src, dest)
 Booking (pid, aid, fid, fdate)
 Give relation algebra expression for the following :
 - i) Retrieve the complete details of all flights to New Delhi
 - ii) Find only flight numbers for passenger with pid 123 for flights to Chennai before 06/11/2020
 - iii) Find the passengers names for those who do not have any bookings in any flights
 - iv) Get the details of flights that are scheduled on both dates 01/12/2023 and 02/12/2023 at 16 : 00 hours
 - v) Find the details of all male passengers who are associated with jet agency. (10 Marks)

OR

- 4 a. Give the ER to relational mapping algorithm. Discuss each step with an example. (10 Marks)
- b. Describe the characteristics of relations with examples. (10 Marks)

Module-3

- 5 a. Determine the six clauses in the syntax of an SQL retrieval query. (06 Marks)
 b. What is a view? Explain how views are created and dropped with example. (06 Marks)
 c. Consider the following schemes :
 SAILOR (SID, SNAME, RATING, AGE)
 BOAT (BID, BNAME, COLOR)
 RESERVE (SID, BID, DAY)
 Specify the following queries in SQL :
 i) Retrieve the sailor names that have reserved red and green boats
 ii) Retrieve the colors of boats reserved by RAJ
 iii) Retrieve the SID's of sailors with age over 20, who have not reserved a red boat
 iv) Retrieve the names of sailors who have reserved all boats. (08 Marks)

OR

- 6 a. Define stored procedures. Explain the creating and calling of stored procedure with suitable example. (10 Marks)
 b. What is a CURSOR? Explain with an example, retrieving multiple tuples with embedded SQL. (10 Marks)

Module-4

- 7 a. Explain the informal design guidelines used as measure to determine the quality of relation schema design. (08 Marks)
 b. Explain 1NF, 2NF and 3NF with an example for each. (12 Marks)

OR

- 8 a. Define multivalued dependency. Explain 4NF with an example. (10 Marks)
 b. What is functional dependency? Write an algorithm to find the minimal cover for set of functional dependency. Find canonical cover of F the FD.
 $F = \{A \rightarrow B, B \rightarrow C, A \rightarrow B, AB \rightarrow C\}$. (10 Marks)

Module-5

- 9 a. Why concurrency control and recovery are needed in DBMS? Explain types of problems that may occur when two simple transactions run concurrently. (10 Marks)
 b. Discuss the ACID properties of database transaction. (05 Marks)
 c. Explain transaction support in SQL. (05 Marks)

OR

- 10 a. Briefly discuss the two phases locking technique for concurrency control. (10 Marks)
 b. With a neat diagram, explain the typical states that a transaction goes through during execution. (10 Marks)
