UG Even Semester Examination, September, 2023

COMPUTER SCIENCE

(4th Semester)

Course No.: MCSCC-403

(Database Management System)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

The figures in the margin indicate full marks for the questions.

Answer any five questions, taking one from each unit.

UNIT-I

1. (a) What are the application programs? Explain database access from application programs? 7

   (b) State and explain vairous features of E-R Models. 7

2. (a) Name the main steps in the Database design. What is the goal of each step? In which steps the ER model mainly used? 7

   (b) Explain about Database users and Administrators? 7

UNIT-II

3. (a) Explain entity relationship model in detail. 7

   (b) Explain set operations of Relational Algebra with examples. 7

4. Explain about selection, projection, rename, division and cartesian product operations in relational algebra. 14

UNIT-III

5. Discuss about Domain Relational Calculus. Write and explain a query in DRC to find the names of sailors who have reserved boat 103. 14

6. Discuss about Tuple Relational Calculus? Write and explain a query in TRC to find the names of sailors who have reserved boat 103. 14

UNIT-IV

7. (a) What is normalization? What are the conditions are required for a relation to be in 2NF, 3NF and BCNF, explain with exampels. 7

   (b) What is meant by functional dependencies? Discuss about Third Normal From? 7

8. What is meant by closure of F? Where F is the set of functional dependencies. Explain computing F+ with suitable exampels. 14

UNIT-V

9. (a) Explain in detail about the two-phase locking protocol? 7

   (b) Explain in detail about Serializability? 7

10. What is transaction? Explain the ACID Properties of Transcations. 14

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