2024
B.A./B.Sc.
Fourth Semester
CORE – 10
COMPUTER SCIENCE
Course Code: CSC 4.31
(Database Management Systems)

Total Mark: 70   *Pass Mark: 28*
Time: 3 hours

Answer <u>five</u> *questions, taking* <u>one</u> *from each unit.*

UNIT–I

1. (a) Define DBMS. What are the advantages and disadvantages of using DBMS?   1+4=5
   (b) Briefly explain the classification of users in DBMS.   3
   (c) Discuss the different types of DBMS architecture with illustrations. 6

2. (a) Explain the different levels in the three-schema architecture.   9
   (b) Write a note on any one of the data models.   3
   (c) What do you understand by logical and physical data independence?   2
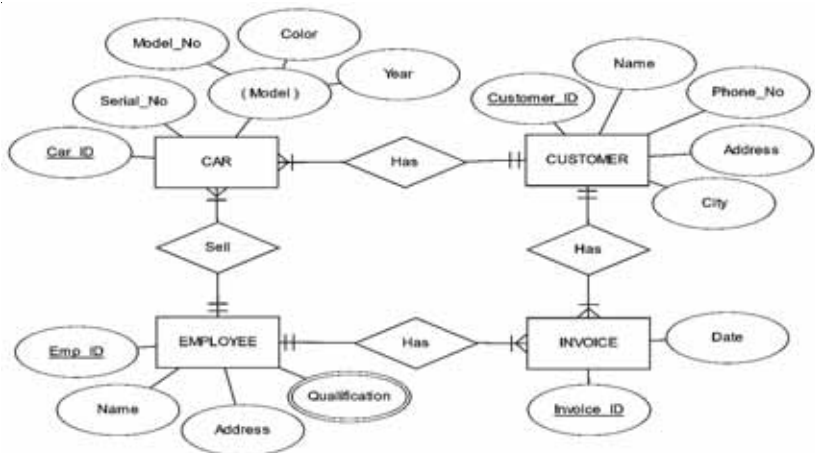
UNIT–II

3. (a) Define entity and weak entity. Give examples.   2+2=4
   (b) What is an attribute? Describe the different types of attributes.   1+4=5
   (c) What is meant by a relationship between two entities? Explain the types of relationship.   1+4=5

4. (a) What is a key in DBMS? Explain all the different types of keys.   1+7=8
   (b) Explain DBMS generalization, specialization, and aggregation.   6

UNIT–III

5. (a) Briefly explain RDBMS.   2
   (b) Write any nine rules from Codd's 12 rules for RDBMS.   9
   (c) Discuss some constraints in relation model.   3

6. (a) What is relational algebra? Explain union, set difference and cartesian product operations.   1+6=7
   (b) What is SQL? Write the advantages and disadvantages of using SQL.   1+6=7

UNIT–IV

7. (a) Map the following ER model to relational model: 10

   (b) Explain the second normal form in DBMS with an example.   4

8. (a) What is functional dependency (FD)? Explain the types of FD with examples.   2+8=10
   (b) Write a note on the types of decomposition.   4

UNIT–V

9. (a) What are pile file and sorted file methods in sequential file organization? Explain how a new record is inserted in pile file and sorted file methods. 4+4=8

   (b) What is a hash function? Describe how it is used in hash file organization. 2+4=6

10. (a) Explain ISAM file organization. Write the pros and cons of using ISAM. 4+2=6

    (b) Describe the B^+ tree structure in B^+ file organization. 8

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