22321

23124

3 Hours / 70 Marks   Seat No. ☐☐☐☐☐☐☐

Instructions – (1) All Questions are *Compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any <u>FIVE</u> of the following :**   **10**

   a) List any four advantages of Database system.

   b) Define the term

       i) Domain

       ii) Attribute

   c) Define the term aggregation with its symbol.

   d) Define term :

       i) Database Schema

       ii) Subschema

   e) Define Data and Information

   f) Define the term integrity constraints.

   g) Define normalization.

Marks

2. **Attempt any THREE of the following :** **12**

a) Explain three level architecture of Database system with neat diagram.

b) Explain following Datamodel with diagram.

    i) Hierarchical Datamodel

    ii) Network Data model

c) Explain different types of attribute.

d) Compare file processing system and Database management system. (any four points)

3. **Attempt any THREE of the following :** **12**

a) Explain referential integrity constraints with example.

b) Explain benefits and drawback of Denormalization.

c) Describe primary key and candidate key with example.

d) Explain centralized database architecture with diagram.

4. **Attempt any THREE of the following :** **12**

a) Explain BCNF with example.

b) Explain parallel database architecture with its advantages.

c) Differentiate between weak and strong entity set with example.

d) Explain Entity Integrity constraint with example.

e) Distinguish between the distributed database system with client server Database system.

Marks

5. Attempt any TWO of the following : **12**

   a) Consider Relation R with 5 attributed L, M, N, O, P. You are given following dependences.

     $L \to M, \quad MN \to P, \quad PO \to L$

     i)   List all keys of R.

     ii)   In what normalized form the R is ? Justify your answer.

   b) Construct E-R diagram for hospital with set of patients and set of medical doctors, associated with each patient a log of various tests conducted.

   c) A database is designed as a single table consisting following columns. Normalize it upto 3 NF.

     Table (stud_ID, S_Name, S_City, Course_ID, Course_title, Teachers_name, Teacher_ID, Mark_obtd)

     Information is provided in last five fields for each course of the student takes.

6. Attempt any TWO of the following : **12**

   a) Consider following schemas

     i)   Course (Course_ID, Course_Name, Fees)

     ii)   Student (Stud_ID, Name, Course_ID)

     Draw and explain parent child relationship for above schemas and find out foreign key with justification.

   b) Draw enhanced ER diagram for banking Database system consider various entities such as Account, Customer, Branch, Loan, Deposit, Borrower. Design specialization and generalization EER feature.

   c) Consider following schema

     Employee (E-ID, Name, Designation, City, Phone_No)

     Write procedure to manipulate given Database by adding, modifying and deleting records.

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