11920

3 Hours / 70 Marks   Seat No. ☐☐☐☐☐☐☐☐

Instructions :   (1)   All Questions are *compulsory.*

   (2)   Answer each next main Question on a new page.

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

   (4)   Figures to the right indicate full marks.

   (5)   Assume suitable data, if necessary.

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

Marks

1.   **Attempt any FIVE :**

   (a)   Define (i) Data Abstraction, (ii) Data Redundancy.   **2**

   (b)   Define the term tuple and domain.   **2**

   (c)   Define primary key and candidate key.   **2**

   (d)   Define constraints, list types.   **2**

   (e)   Define Data and instance.   **2**

   (f)   Write Syntax for create table.   **2**

   (g)   Define Normalization, list its types.   **2**

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

(a)   Explain three tier architecture of database with the help of diagram.   **4**

(b)   Describe client server system with example.   **4**

(c)   Explain Generalization with example.   **4**

(d)   Explain components of database in detail.   **4**

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

(a)   Explain Domain constraints with Syntax and example.   **4**

(b)   Describe benefits and drawbook of denormalization.   **4**

(c)   Explain different types of attribute with example and their symbols used in ER diagram.   **4**

(d)   Differentiate between Hierarchical Database model and network database model.   **4**

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

(a)   Explain functional dependency with example.   **4**

(b)   Explain merits and demerits of Object Oriented Database model.   **4**

(c)   Draw the symbols used for entity relationship diagram and write their meaning.   **4**

(d)   Explain any 4 Codd's rules.   **4**

(e)   Explain distributed database system with example.   **4**

5. **Attempt any TWO :**

   (a) Consider following relation

   student (Roll_No, name, class, total_marks, percentage, Grade).

   Find appropriate dependencies and normalize upto 3 NF. **6**

   (b) Identify entities and their relationship in terms of tables for railway reservation system. **6**

   (c) Consider given relation R = (A, B, C, D, E) with the following functional dependencies {CE $\rightarrow$ D, D $\rightarrow$ B, C $\rightarrow$ A}.

   (i) List all key for R.

   (ii) Identify the best normal form that R satisfies. **6**

6. **Attempt any TWO :**

   (a) Consider the following schema

   student (R_No, Name, DOB, Percentage, D_No).

   Write procedure to manipulate given database by adding, modifying and deleting records. **6**

   (b) Draw the enhanced E-R diagram for College Management System and show strong entity set, weak entity set, super class and sub class. **6**

   (c) Consider the following schemas :

   (i) Dept (Dept_No, DName, LOC)

   (ii) Emp (Emp_No, Ename, Job, Sal, Dept_No)

   Draw and explain parent child relationship for above schemas and apply referential integrity constraint. **6**

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