1801N1607   Candidate's Seat No :_____

IMSc CS Sem.-2 (ATKT) Examination
Database Mgmt Systems-I
January-2024

Time : 3-00 Hours]   [Max. Marks : 70

Instructions:

- **Write both the Sections in the separate answer book.**
- **Both Sections having equal weightage.**
- **Draw Diagrams wherever necessary.**
- **Make Assumptions wherever necessary.**

SECTION – I

Q-1   **Explain the following terms with an appropriate example:**   **11**
     a. BCNF   3
     b. Cardinality   4
     c. Degree of a Relationship   4

Q-2   **Attempt the following :**   **12**
     1. Discuss the Three-Tier DB architecture with diagram
     2. List different data models and discuss any one in detail
OR
Q-2   **Attempt the following :**
     1. Explain all the Armstrong's Axioms in detail with appropriate examples   **12**
     2. Explain main functions of DBA

Q-3   **Attempt the following :**   **12**
     1. Discuss various stages of Normalization with appropriate example
     2. Construct a clean and concise ER diagram for the Hospital Management System. Assume the required entities and plot all the relationships.

OR
Q-3   Attempt the following: **12**
     1. List and elaborate leels of data abstraction.
     2. Explain ER Modelling symbols with their appropriate usage.

SECTION – II

Q-4   Explain the following Terms with an appropriate example.   **11**
     a. Schema   3
     b. Selection Operator   4
     c. Functional Dependency   4

Q-5   Attempt the following: **12**
     a. Derive the schema from above created ER digram. Plot the   **7**
         unnormalised form and Normalize the structure for Hospital management system to the best possible level.
     b. Discuss Joins in MySQL with example   **5**

P.T.O

OR

Q-5   **Attempt the following:**   **12**
      a. **Define** a. Canonical Cover b. Anomalies in Database   **6**
      b. Explain ACID properties in detail   **6**

Q-6   **Attempt the following:**   **12**
      a. Discuss the Native relational operators of relational algebra   **7**
         with appropriate examples
      b. Compare : File System Vs DBMS Vs RDBMS   **5**

OR

Q-6   **Attempt the following:**   **12**
      a. Write Relational Algebra Queries for the following   **8**
         Books (ISBN, Autbor. Title, Publisher, Publisher_Date, Pages,
         Notes)
         Store (Store_Id. StoreName, Street, State, City. Zip)
         Stock (ISBN. Store_Id, Price, Quantity)
            a. Display all students who have issued books of
               "McGraw" Publisher
            b. Display all the books where Price is less than 1000
            c. Display all the Author details whose books are out of
               stock
            d. Find identifier of all stores that carry a non-zero
               quantity of every book in the "BOOKS" relation
            e. Display the store which has stock of BPB publisher
      b. Explain Constraints in MySQL   **4**

—X—