Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Sc.(IS)/SEM-1/MI-104/2012-13

2012

DATABASE MANAGEMENT SYSTEM

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

   i) A set of allowable values for one or more attribute is known as

   a) Tuple b) Domain

   c) Parameter d) none of these.

   ii) 'ALTER' falls in which database language ?

   a) DML b) TCL

   c) DDL d) SDL.

   iii) If 'DOB' is stored in database then 'age' falls in which category ?

   a) Multivalued b) Stored

   c) Derived d) Composite.

iv) Varchar2 can hold character up to

a) 255 b) 2000

c) 200 d) 4000.

v) Composite primary key should be defined at

a) column level b) table level

c) creation level d) custom level.

vi) Attribute inheritance occurs in

a) generalization b) specialization

c) aggregation d) none of these.

vii) Normalization of database is needed to

a) reduce data error

b) eliminate data redundancy

c) make more accurate data

d) none of these.

viii) Relational Algebra is what type of language ?

a) Non-procedural language

b) Procedural language

c) Data manipulation language

d) Both (b) and (c).

ix) The values of the attributes describe a particular

a) attribute b) entity

c) instance d) none of these.

x) What are the transaction properties ?

a) ABCD property b) ACID property

c) DEADLOCK d) READ-WR property.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. "All primary key is the super key but the converse is not true." Clarify.
3. Explain the difference between external, internal & conceptual schemas. Distinguish between logical and physical data independence.
4. State the properties of a relational model.
5. Explain natural join operation in relational algebra with example.
6. Describe 3-level architecture of DBMS.

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Describe inference rules for functional dependencies.
   b) What is functional dependency ?
   c) What do you mean by full functional dependency ?

   5 + 5 + 5

8. Write short notes on any *three* of the following : 3 × 5
   a) Normalization
   b) Relational algebra
   c) Data abstraction
   d) ACID property
   e) Advantages of RDBMS.

9. What is an E-R diagram ? With an example describe specialization & generalization. What is attribute inheritance ? 3 + 7 + 5

10. a) What do you mean by integrity constraint ? Describe.

    b) What is lossless decomposition ? Give example.

    c) Compute the closure of the set *F* of FDS for the relational schema, *R* = (*A, B, C, D, E*)

    $A \rightarrow BC$ $CD \rightarrow E$

    $B \rightarrow D$ $E \rightarrow A$

    List the candidate keys of *R*. 3 + 6 + 6

11. Given relational schemas are the apply SQL to solve the queries :

    a) Sailor (sid, SName, age, ratings)

    Boat (Bid, BName, Colour)

    Reserve (sid, Bid, Date)

    i) Find out the colour of the boat booked by the sailor named 'Ajay'.

    ii) Find out the date of booking of the boat named 'Interlake'.

    iii) Find out the details of the oldest sailors.

    iv) Find out the name of the boat which is booked by the sailor named 'Ram'.

    b) Explain 1 NF, 2 NF, 3 NF, BCNF.

    c) What is the difference between physical and logical data independence ? Explain. 7 + 3 + 5