Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/MBA (NEW)/SEM-(3 FT & 5 PT)/SM-301/2010-11

2010-11
DATABASE MANAGEMENT

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 any *ten* of the following :   10 × 1 = 10

    i)   DCL is a language that allows

         a)   granting of privileges   b)   retrieval of data

         c)   alter schema objects   d)   rename schema.

    ii) Project operator in the relation algebra reduces

         a)   number of rows

         b)   number of columns

         c)   both rows and columns

         d)   none of these.

    iii) Foreign key is used to achieve

         a)   entity integrity   b)   domain constraint

         c)   data interdependence   d)   referential integrity.

16035   [Turn over

iv) Schema of a database defines the

    a) overall structure of the database

    b) physical storage of the database

    c) external view of the database

    d) logical relationships between entities.

v) Which is *not* an ACID property ?

    a) Atomicity   b) Integrity

    c) Consistency   d) Durability.

vi) If every non-key attribute is fully functionally dependent on the primary key, then the relation will be at least in

    a) 1 NF   b) 2 NF

    c) 3 NF   d) 4 NF.

vii) In relational model, the number of rows in a table is termed as

    a) cardinality   b) degree

    c) domain   d) none of these.

viii) Triggers in database operation is

    a) event based   b) sequential operation

    c) result based   d) solution oriented.

ix) In a multiuser database, if two users wish to update the same record at the same time, they are prevented from doing so by

    a) jamming   b) password

    c) documentation   d) record-lock.

x) Network model supports .... relationships.

    a) One-to-one   b) One-to-many

    c) Many-to-many   d) All of these.

xi) The primary key is chosen by

    a) DBA   b) User

    c) Programmer   d) None of these.

xii) Assume transaction *A* holds a share lock *R*. If a transaction *B* also requires for a shared lock on *R*

   a)   it will result in deadlock situation

   b)   it will immediately be granted

   c)   it will immediately be rejected

   d)   it will be granted as soon as it is released by *A*.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2.   Explain ACID properties of online transaction.

3.   a)   Define database & DBMS.

   b)   What is meant by metadata ?

   c)   Define schema of a database. $2 + 1 + 2$

4.   Differentiate between hierarchical and network datamodel.

5.   Discuss the role played by DBA and database programmer.

6.   Explain DDL, DML & DCL.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7.   a)   Explain with diagram 3 schema architecture of a database.   9

   b)   Briefly explain the key constraint, domain constraint, referential constraint of a relation.   6

8.   a)   Explain stored procedure & triggers with examples.   8

   b)   Discuss process of query optimisation. What is its objectives ?   7

9. a) Briefly explain the advantages and disadvantages of Database Management system. 5

   b) List and explain with suitable example five primary relational algebra operators. 10

10. Consider the following relational schema, where the keys are underlined :

    Client_master (Client_no, add, city, state, bal_due, name)
    Product_master(Product_no, sell_price, description)
    Salesman_master (Salesman_no, salesman_name, add)
    Sale_order_details (Order_no, Client_no, Product_no, Order_date, Sales_no, Qty_order, Qty_ship)

    Write SQL statement for following queries :

    a) Find out client who stay in a city whose second letter is a 2

    b) Count the no. of products having price greater than or equal to Rs. 1500 2

    c) Find the description and the total qty, sold for each product 2

    d) Find the products and their quantities for the orders placed by the client no. "C001" & "C002". 2

    e) Find the customer name, address, city for the client who has placed order no. 19001 2

    f) Find the names of clients who had placed order worth Rs. 10,000 or more. 2

    g) Create table sale_order_details with order_no. as primary key & product_no, client_no as foreign key and insert a set of data in this table. 2 + 1

11. a) Explain the process of normalisation upto BCNF. 10

    b) Explain deadlock and its method of prevention. 5

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