CS/MCA/Even/4th Sem/MCA-403/2014

2014

Database Manageent System - II

Time Alloted : 3 Hours　　　　　　　　**Full Marks : 70**

The figure 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:

　　　　　　　　　　　　　　　　　　　　　　10x1=10

　i)　Tables derived from the ERD

　　　　a) Are totally unnormalised

　　　　b) Are always in 1 NF

　　　　c) Can be further denormalised

　　　　d) May have multi - valued attributes

　ii)　Spurious tuples may occur due to i) Bad normalization ii)
　　　Theta joins iii) Updating tables from join

　　　　a) I & II

　　　　b) II & III

c) i & iii

d) ii & iii

iii) ABC is a set of atributes. The functional dependency is as follows AB - > B, AC-> C, C->B

　　a) is in 1NF

　　b) is in 2NF

　　c) is in 3NF

　　d) is in BCNF

iv) In mapping of ERD to DFD

　　a) entities in ERD should correspond to an existing entity / store in DFD

　　b) entity in DFD is converted to attributes of an entity in ERD

　　c) relations in ERD has 1 to 1 correspondence to processes in DFD

　　d) Relationships in ERD has 1 to 1 correspondence to flows in DFD

v) A dominant entity is the entity

　　a) on the N side in a 1:N relationship

　　b) on the 1 side in a 1:N relationship

　　c) on either side in a 1:1 relationship

　　d) Nothing to do with 1:1 or 1:N relationship

vi) Select 'NORTH', CUSTOMER from CUST_DTLS where REGION = 'N' order by CUSTOMER Union select 'EAST',

CUSTOMER from CUST_DTLS where REGION = 'E' order by CUSTOMER. The above is

    a) Not an error

    b) Error - the string in single quotes 'NORTH' and 'SOUTH'

    c) Error - the string should be in double quotes

    d) Error - ORDER BY clause

vii) The distinguishable parts of a record are called

    a) Files

    b) Data

    c) Fields

    d) Data Base

viii) The data dictionary tells the DBMS

    a) What files are in the database

    b) What attributes are possessed by the data

    c) What these files contain

    d) All of these

ix) To select a tuple from a relation database table, the symbol used in relational algebra is

    a) Pie

    b) Lamda

    c) Sigma

d) Gama

x) Relational algebra is what type of language ?

    a) Non-procedural language

    b) Procedural language

    c) Data manipulation language

    d) Both (b) and (c)

xi) Normalization of database is needed to

    a) Reduce data error

    b) Elimination data redundancy

    c) Make more accurate data

    d) None of these

xii) What are the transaction properties ?

    a) BASIC

    b) NUTRAL

    c) ACID

    d) WRITE AHED

xiii) Given a relation R, attribute A is _____ on B if each value of A in R is associated with precisely one value of B.

    a) Multi-valued dependency

    b) Data Independence

    c) Functional Dependency

    d) Transitive dependency

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GROUP - B

(Short Answer Type Questions)
Answer any *three* of the following.   3x5=15

2. Define trivial MVD. Give an example

                                                    3+2

3. Define Serializable Schedule ? Give an example

                                                    4+1

4. Define 2PL, what do you mean by strictly 2PL? Give an example.

                                                    2+2+1

5. Discuss Dead Lock recovery?

                                                    5

6. Define DKNF. Give an example. Why is it considered to be the

   highest form of normalization?

                                                    4+1

7. What do you understand by dependency preservation ?
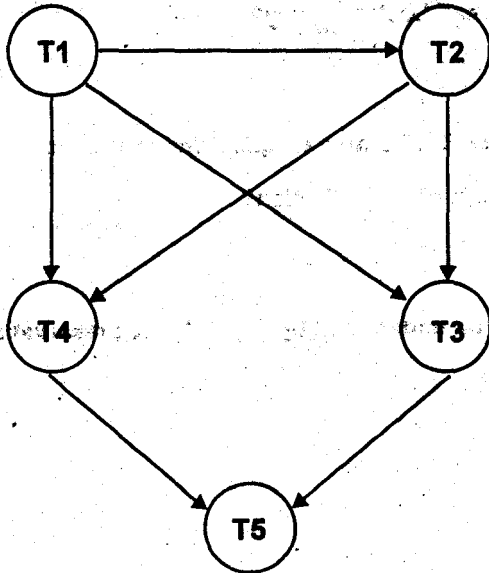
                                                    5

GROUP - C
(Long Answer Type Questions)
Answer any *three* of the following.   3x15=45

8. What is normalization and denormalization? What are the necessary reasons for normalization ? What is trivial multivalued dependency ? Consider the following relation.

   REFRIG {Model #, Year, Price, Colour, Manufac_plant} abbreviated as R{M,Y,P,C,MF} with the functional dependancies F={M → MF, MY → P, MF → C}. It is decomposed into D={R1{M,Y,P}, R2 {M,MF,C}} is the decomposition lossless ? Why?   4+4+2+5

9. List the ACID properties and give your views as to which one you think is the most important property. What is the utility of concurrent execution of transaction ? What are conflict serializable and view serializable schedules ?

For the above create the corresponding schedule and state whether it is conflict serializable or not.   5+2+3+5

10. What is a lock? What are the advantages and disavantages of strict two phase locking protocol ? Time stamp ordering protocol guarantees freedom from deadlock but not starvation. Explain. What do you think is the solution for the said problem? What is lock upgradation and lock compatibility?   1+3+5+2+4

11. Differentiate between SQL and PL/SQL with respect to their access to Oracle Engine. What is active data set and what is its use ? Make a comparative study of the different argument modes used in functions and procedures, Consider the relation EMP {Empno, Ename, Sal, Job, Dept}. Write a PL/SQL block of code that would update the salaries of the different employees accordingly.

a) Salesman — 5%

b) Manager — 10%

c) CEO — 15%

d) President — 20%

The code must use minmum amount of buffer space.

3+2+5+5

12. Write short notes on (Any *three*)

a) Shadow paging

b) Utility of triggers

c) Referential integrity

d) Indexed Sequential Access Method (ISAM)

e) Types of transaction failures.

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