Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech (BT)/SEM-4/CS-415/2010

2010

DATABASE MANAGEMENT SYSTEM & COMPUTER NETWORKING

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 : $10 \times 1 = 10$

i) Both way communications at a time is possible in

a) Simplex b) Half Duplex

c) Full Duplex d) All of these.

ii) Signaling and interpretation of bits are done in OSI

a) Data link layer b) Physical layer

c) Network layer d) Presentation layer.

iii) The interconnection network is very much costly in

a) BUS b) RING

c) MESH d) STAR.

iv) "End to end delivery" is done by

a) Transport layer b) Network layer

c) Data link layer d) Session layer.

v) Routing of packet is done in

a) Transport layer b) Network layer

c) Session layer d) Data link layer.

vi) In guided media, communication will be faster in

a) UTP cable b) Coaxial cable

c) STP cable d) Fiber optics.

vii) DBA is a

a) Software b) Hardware

c) Person d) Others.

viii) View is a

a) Temporary table b) Virtual table

c) SQL statement d) Permanent table.

ix) Relational algebra is a

a) Procedural language

b) Non-procedural language

c) Query language

d) Structured language.

x) In a two phase locking protocol a transaction must

a) Release all locks at the same time

b) Not obtain any new locks once it has started locks

c) Only obtain locks on item not used by any other transactions

d) Ensure that deadlock will never occur.

xi) Cardinality ratio means

a) Number of attributes associated with any entity

b) Number of relation in E-R diagram

c) A ratio between number of relation and number of entity of an E-R diagram

d) The number of entities to which another entity can be associated via relationship set.

xii) Referential integrity means

a) Super key – candidate key relation ship

b) Primary key – foreign key relationship

c) Integrity between two relationships

d) The way one database in the distribute system references another database.

xiii) Redundancy is dangerous as it is potential threat to data

a) Integrity b) Consistency

c) Sufficiency d) None of these.

GROUP – B

(Short Answer Type Questions)

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

2. a) What is strong entity set ? Give example. 3

   b) What is "Partial key" ? 2

3. a) What is "Cardinality Ratio" ? Explain with suitable example. 3

   b) What is "Specialization" ? 2

4. a) What are "Data Independence" and "Data Abstraction" ? 3

   b) What is "view" ? 2

5. a) What is "Location Transparency" ? 2

   b) Explain the process of query optimization. 3

6. Explain "Deadlock" in case of transactions. What are deadlock prevention an detections ? 5

GROUP – C

(Long Answer Type Questions)

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

7. Design an E-R diagram of hospital management system with the following entity :

Try to include the constraints in the E-R.

User (login, password), Admin (login, password),

Test (diag_no, diag_date, remark, advice_date, final _diag, ecg, others)

Patients (reg _ no, reg _ date, name, add, city, contact _ no)

Medicine (diag_no, med_no, med_name, precaution, no_of_ doses)

Blood_test (reg _no, test_date, haemoglobin, tlc,esr, other)

Patient _ fee (receipt _ no, reg _ no, amt _ due, amt _ paid, date _ payment).

8. a) Consider the following table :

Emp (empid (pk), ename, dateofjoin, salary, add)

Project (projid (pk), pname, investamount, empid)

Give an expression in SQL for each of the following :

i) Find all employees names whose project investment amount is more than 20,000.

ii) Find all employees name, pname, and invest-amount in descending order of their salary.

iii) Find the maximum invest amount for each salary types.

iv) Find the employee name who are not assigned in any project.

v) Find the HRA, DA, PF and GROSS of each employee ascending order of their GROSS pay (HRA is 20% of salary, DA is 50% of salary, PF is 15% of salary, GROSS =salary + hra + da-Pf). 10

b) What do you mean by DML function in SQL ? Explain at least five with proper Syntax. 5

9. a) How do guided media differ from unguided media ? 2

   b) Explain the three major classes of guided media. 5

   c) Explain IP addressing system with example. 8

10. a) What are weak entity and strong entity ?

    b) What is DBA ?

    c) Explain foreign key.

    d) What are the ACID properties in transaction ?

    3 + 3 + 4 + 5

11. Write short notes on any *three* of the following : 3 × 5

    a) Router

    b) Search engine

    c) SMTP

    d) ISO-OSI model

    e) LAN, MAN, WAN.