Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH(BT)(OLD)/SEM-4/CS-415/2012

2012

DATABASE MANAGEMENT SYSTEM AND COMPUTER NETWORK

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 : $10 \times 1 = 10$

   i) The employee salary should not be greater than 30,000. This is

      a) integrity constraint

      b) referential constraint

      c) over-defined constraint

      d) feasible constraint.

   ii) Relational algebra is a

      a) Procedural language

      b) Non-procedural language

      c) Query language

      d) Normalization technique.

iii) Transaction follows

a) ACID properties

b) Non-preemption property

c) Preemption property

d) Starvation property.

iv) What does an attribute mean ?

a) Property of an entity

b) Something about which we collect data

c) Something which relates existing entities

d) Relation of two entities.

v) Cardinality ratio means

a) number of attributes associated with an entity

b) number of relation of an ER diagram

c) a ratio between number of relation and number of entity of an ER diagram

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

vi) IMAP stands for

a) Internet Message Access Protocol

b) Internet Message Access Process

c) Internal Message Access Protocol

d) Internal Message Access Process.

vii) Referential Integrity means

a) Super key-candidate key relationship

b) Primary key-foreign key relationship

c) Integrity between two relationships

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

viii) In 2-phase locking a transaction must

a) release all locks at the same time

b) not obtain any new locks once it has started releasing locks

c) only obtain locks on items not used by any other transactions

d) ensure that deadlocks will never occur.

ix) DBA is a

a) Software b) Hardware

c) Person d) Others.

x) View is a

a) Temporary table

b) Virtual table

c) SQL statement

d) Query.

GROUP – B

(Short Answer Type Questions)

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

2. Explain the differences between weak entity set and string entity set.

3. Explain simplex and duplex communications.

4. Describe 3-schema architecture of database.

5. What are the main drawbacks of file management system.

6. What are the major advantages and disadvantages of DBMS ?

GROUP – C

(Long Answer Type Questions)

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

7. Consider the following tables :

DEPT (deptno (PK), dname, location)

EMP (empID (PK), fname, lname, salary, dateofjoin, deptno)

a) Write SQL to enter the following data :

i) deptno = 10, dname = finance, location = kolkata

ii) empid = 101, fname = X1, lname = Y1, Salary = 10000, dateofjoin = 10th June 1977, deptno = 10.

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b) Write SQL for each of the following queries :

i) List fname, and lname for all employees who earns more than average salary.

ii) List fname, lname, empid, and dname of all the employees

iii) List fname and empid of all employees who joined the company in the year of 2002. 9

8. What is IP ? Explain in brief, TCP/IP protocol stock. What are the different classes of IP address ? Discuss. Describe the fragmentation of IP datagram. 3 + 5 + 3 + 4

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

   i) DNS

   ii) SMTP

   iii) ISO-OSI model

   iv) Router

   v) Search engine.

10. Explain any *five* of the following : 5 × 3

   i) Super key and candidate key

   ii) Derived attribute

   iii) Natural JOIN

   iv) Data independence

   v) Network topology

   vi) URL

   vii) Bridge

   viii) ACID property of DBMS.

11. A university register's office maintains data about the following entities :

    a) Courses, including number, title, credits, syllabus, and prerequisites

    b) Courses offered, including course number, year, semester, section number, instructions, timing and class room.

    c) Students, including students ID, name and program

    d) Instructors, including identification number, name, department, and title. Further, the enrollment of students in courses and grades are awarded to students in each course they are enrolled for must be appropriately modelled.

    Construct an ER diagram for the registrar's office. Document all assumptions that you make about the mapping constraints. Convert your ER diagram into a relational model. 15