Code: DC62   **Subject: DATABASE MANAGEMENT SYSTEMS**

DipIETE – CS

Time: 3 Hours   **DECEMBER 2012**   **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.
- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1   **Choose the correct or the best alternative in the following:**   **(2×10)**

a. Which of the following is not true of the traditional approach to information processing?

   (A) there is common sharing of data among the various applications
   (B) it is file oriented
   (C) programs are dependent on the file
   (D) it is inflexible

b. Which of the following hardware component is the most important to the operation of database management system?

   (A) high resolution video display   **(B)** printer
   (C) high speed, large capacity disk   **(D)** plotter

c. Which of the following is not an advantage of the database approach?

   (A) Elimination of data redundancy   **(B)** program/data independence
   (C) increased security   **(D)** All of these

d. Derived attributes in ER-diagrams are represented by

   (A) ⬭   **(B)** ⬭ ---------

   (C) ⬭(double)   **(D)** ⬭(dashed)

e. A database is a collection of

   (A) fields   **(B)** records
   (C) relations   **(D)** sectors

f. Which of the following is not a relational algebra operation?

(A) Update   (B) Division
(C) Join   (D) Project

g. _____ are used to store indices

(A) records   (B) ER diagrams
(C) B^+ trees   (D) CASE tools

h. Which of the following are a type of end users of the database

(A) Database Designers   (B) DBA
(C) Naive   (D) Software Engineers

i. If a piece of data is stored in two places in the database, then

(A) it results in redundancy
(B) changing the data in one spot will cause data inconsistency
(C) can be more easily accessed
(D) both (A) and (B)

j. A command in SQL that lets you delete one or more records in a record is

(A) drop   (B) update
(C) delete   (D) none of these

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. What is Database Management System? What are the advantages of using database approach?   **(8)**

b. Describe the three-schema architecture. What is data independence? Explain.**(8)**

Q.3 a. Illustrate and explain the main phases of database design.   **(8)**

b. What are Weak entity types? Explain with the help of examples.   **(8)**

Q.4 a. Explain relational database design using ER – to - Relational Mapping.   **(8)**

b. Explain join and division operations.   **(4+4)**

Q.5 a. Discuss the following SQL commands with example:-   **(8)**
      (i)   Update
      (ii) Drop View
      (iii) Insert
      (iv) Alter Table

     b. Consider the following COMPANY database (keys are underlined)

       EMPLOYEE (Ename, SSn, Birthdate, Address, Salary,Super- SSn, Dno)
       DEPARTMENT (Dname, Dno, Mgr-SSn)

       Write the SQL queries for the following statements:-
       (i) Retrieve the birthdate and address of the employees whose name is
         'Rahul'.
       (ii) Retrieve the name and address of all employees who work for the
         'engineering' department.   **(8)**

Q.6 a. Explain second and third normal forms with the help of suitable examples. **(8)**

     b. What do you mean by functional dependencies? Explain.   **(8)**

Q.7 a.   Explain fourth normal form.   **(8)**

     b. Explain Nonadditive (Lossless) join property of a decomposition.   **(8)**

Q.8 a. Discuss the basic operations on files.   **(8)**

     b. Explain the types of single-level ordered indexes.   **(8)**

Q.9 a. How to translate SQL queries into relational algebra?   **(8)**

     b. What are the aggregate operations and how they can be implemented?   **(8)**