

DiplETE - CS

Time: 3 Hours

DECEMBER 2013

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 a problem of file management system?
- (A) difficult to update (B) lack of data independence
(C) data redundancy (D) all of these
- b. What is the language used by most of the DBMSs for helping their users to access data?
- (A) High level language (B) Assembly language
(C) Query language (D) Machine language
- c. Which of the following is an advantage of the database approach?
- (A) Elimination of data redundancy (B) Ability of associate deletion data
(C) Increased security (D) All of these
- d. Which of the following contains a complete record of all activity that affected the contents of a database during a certain period of time?
- (A) report writer (B) query language
(C) data manipulation language (D) transaction log
- e. A table can have only one
- (A) Foreign key (B) Primary key
(C) Candidate key (D) Composite key
- f. A command that lets you change one or more fields in a record is
- (A) insert (B) modify
(C) lookup (D) none of these

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

g. 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

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

- (A) storage space is wasted
(B) changing the data in one spot will cause data inconsistency
(C) can be more easily accessed
(D) both (A) and (B)

i. The relational database environment has all of the following components except

- (A) users (B) separate files
(C) database (D) query languages

j. Which of the following is not a method of collision resolution in hashing ?

- (A) chaining (B) folding
(C) open addressing (D) multiple hashing

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

Q.2 a. What are the different types of database end users? Discuss the main activities of each. (8)

b. Describe the three-schema architecture. What is the difference between logical data independence and physical data independence? (4+4)

Q.3 a. Discuss the database design process using high level data model. (8)

b. (i) Define the entity type and entity set. (4)
(ii) Define foreign key. What is this concept used for? (4)

Q.4 a. What are the unary relational operations? Explain. (8)

b. Discuss the steps in relational database design using ER-to-Relational mapping. (8)

Q.5 a. Discuss the following SQL commands with example:- (8)
(i) Create table (ii) Drop Table
(iii) Drop Schema (iv) Alter Table

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

- b. Consider the following COMPANY database (Keys are underlined)
EMPLOYEE (Ename, SSn, Address, Salary, super_SSn, Dno)
DEPARTMENT (Dname, Dno, Mgr_SSn)
DEPT_LOCATIONS (Dno, Dlocation)
PROJECT (Pname, Pno, Dno)

Write SQL queries for the following statements:

- (i) Retrieve the names and addresses of employees who work in departments located at 'Delhi'.
 - (ii) Retrieve the Manager SSn of Project number 'PO1'. **(4+4)**
- Q.6** a. Discuss the insertion, deletion and modification anomalies. **(8)**
- b. Explain first and second normal forms with suitable examples. **(8)**
- Q.7** a. Discuss multivalued dependencies with suitable examples. **(8)**
- b. Write note on Boyce-Codd normal form. **(8)**
- Q.8** a. Discuss the following:-
(i) Files of unordered records
(ii) Files of ordered (sorted) records **(8)**
- b. Discuss the single-level ordered indexes and their types. **(8)**
- Q.9** a. Briefly describe the methods for implementing JOIN operations. **(8)**
- b. Write short note on Aggregate Operations. **(8)**