

DiplETE – CS (Current Scheme)

Time: 3 Hours

December 2016

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 one is a type of data independence?

(A) Logical	(B) Biological
(C) Physiological	(D) Chemical
 - b. For a table to be in third normal form, it must necessarily be in:

(A) 1NF	(B) 2NF
(C) 1 AND 2 NF	(D) BCNF
 - c. A relation that has no partial dependencies is in:

(A) BCNF	(B) 3NF
(C) 2NF	(D) 4NF
 - d. In the relational modes, cardinality is termed as:

(A) Number of tuples	(B) Number of attributes
(C) Number of tables	(D) Number of constraints
 - e. In an E-R diagram attributes are represented by:

(A) Rectangle	(B) Square
(C) Ellipse	(D) Triangle
 - f. The language which has recently become the de facto standard for interfacing application programs with relational database system is

(A) Oracle	(B) SQL
(C) Dbase	(D) 4GL
 - g. The property / properties of a database is / are:

(A) It is an integrated collection of logically related records.	(B) It consolidates separate files into a common pool of data records.
(C) Data stored in a database is independent of the application programs using it	(D) All of the above
 - h. The method in which records are physically stored in a specified order according to a key field in each record is

(A) Hash	(B) Direct
(C) Sequential	(D) All of these

- i. A DBMS query language is designed to
 (A) support end users who use English-like commands
 (B) support in the development of complex applications software
 (C) specify the structure of a database
 (D) all of these
- j. It is possible to define a schema completely using
 (A) VDL and DDL (B) DDL and DML
 (C) SDL and DDL (D) VDL and DM

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

- Q.2** a. What do you understand by data, database and database management system? Also explain the two basic types of data independence. (4+4)
- b. Explain the three schema architecture in detail with the help of a diagram. (8)
- Q.3** What is the significance of ER diagram? Draw an ER diagram for depicting the employee's information who works for a project in an organization. The diagram should include details of the employee (such as name, age, and salary), department (location, name etc) and project (location, name etc). Also map ER diagram into Relational Model and take suitable assumptions. (4+8+4)
- Q.4** a. Explain the relational operations "PROJECT" and "SELECT" with the help of an example. (8)
- b. Explain the various type of Joins with example. (8)
- Q.5** a. Explain any 10 basic SQL queries. (10)
- b. Explain the following statements with syntax and suitable example on the following:
 (i) Insert Statement in SQL
 (ii) Delete Statement in SQL
 (iii) Update Statement in SQL (3*2=6)
- Q.6** a. What is the need of normalization? What do you understand by functional dependencies? (2*2 = 4)
- b. With the help of an example, explain the basic concepts of the following:
 (i) First normal form
 (ii) Second normal form
 (iii) Third normal form (3*4 = 12)
- Q.7** a. Explain the algorithms for relational database schema design. (12)
- b. Write a short note on the Boyce-Codd Normal Form. (4)
- Q.8** Write the following techniques in detail:
 (i) Static Hashing (5)
 (ii) Dynamic Hashing (5)
 (iii) Use of Indexes in DMBS (6)
- Q.9** a. Explain query optimization process of oracle in detail. (10)
- b. How multivalued dependency is different from functional dependency. Explain using an example. (6)