

DiplETE – CS (New Scheme)

Time: 3 Hours

June 2018

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)

- In a relational model, relations are termed as
(A) Tuples (B) Attributes
(C) Tables (D) Rows
- The database schema is written in
(A) HLL (B) DML
(C) DDL (D) DCL
- In the architecture of a database system external level is the
(A) Physical Level (B) Logical Level
(C) Conceptual Level (D) View Level
- An entity set that does not have sufficient attributes to form a primary key is a
(A) Strong Entity Set (B) Weak Entity Set
(C) Simple Entity Set (D) Primary entity set
- In a hierarchical model records are organized as
(A) Graph (B) List
(C) Links (D) Tree
- Which of the following is not a property of Transactions?
(A) Atomicity (B) Consistency
(C) Identity (D) Durability
- An advantage of the database management approach is
(A) Data is dependent on program
(B) Data redundancy increases
(C) Data is integrated and can be accessed by multiple programs.
(D) None of these

- h. Key to represent relationship between tables is called
(A) Primary Key (B) Secondary Key
(C) Foreign Key (D) None of these
- i. It is better to use files than a DBMS when there are
(A) Stringent real time requirements.
(B) Multiple users wish to access the data
(C) Complex relationships among data
(D) All of these
- j. Which of the following is a legal expression in SQL
(A) SELECT NULL FROM EMPLOYEE;
(B) SELECT NAME FROM EMPLOYEE;
(C) SELECT NAME FROM EMPLOYEE WHERE SALARY = NULL;
(D) None of these

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

- Q.2** a. Explain the two-tier client/server architecture? (8)
- b. What is data redundancy? What are the disadvantages of having redundancy within a database? (8)
- Q.3** a. Explain the concept of generalization and specialization (8)
- b. What is a relationship type? Explain the differences among a relationship instance, a relationship type, and a relationship set. (8)
- Q.4** a. Explain Delete and Update operation and also explain how they deal with constraint violation? (8)
- b. Define the following: (8)
(i) Entity Integrity Constraint
(ii) Referential Integrity Constraint
- Q.5** a. Write the steps to convert the basic ER model to relational database schema. (14)
- b. Explain the following operations: (4)
(i) UNION
(ii) MINUS
- Q.6** a. What are the basic data types available for attributes in SQL? (8)
- b. Explain how the GROUP BY clause works. What is the difference between the WHERE and HAVING clause? (8)

- Q.7** a. Discuss insertion, deletion and modification anomalies. Why are they considered bad? Explain with example. (8)
- b. Discuss the purpose of Boyce-Codd Normal Form and describe how BCNF differs from 3NF. (8)
- Q.8** a. Discuss the problems associated with NULL when designing a relational database schema. (8)
- b. Define join dependencies and fifth normal form. Why is 5NF also called project-join normal form(PJNF). (8)
- Q.9** a. Describe properties of Transactions (8)
- b. Discuss different types of failures. What is meant by catastrophic failure? (8)