Professional Course Examination, January 2021

(3rd Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper No. : BCA/3/CC/15

(Database Management Systems) (Revised)

Full Marks : 75

Time : 3 hours

(PART : A - OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

SECTION - A

(Marks : 15)

I. ***Tick (√) the correct answer in the brackets provided:*** **(1x10=10)**

1. The _____ defines how and where data are organized in physical data storage:
   (a). Internal schema (b). External schema
   (c). Conceptual schema (d). None of the above

2. Which of the following constraint indicate the time period for which some information is valid:
   (a). Type (b). Relationship
   (c). Temporal (d). Structural

3. A _____ is a set of all possible data values:
   (a). Relation (b). Domain
   (c). Attribute (d). Primary key

4. A full form of database standard name 'DBTG' is:
   (a). Database Task Group (b). Database Team Group
   (c). Data-big Task Group (d). Data-big Team Group

5. If relations A=(1,2,3,4,5) and B=(1,3,4,6,8), what will be the value of *Z=A U B*? :
   (a). Z=(1,2,3,4,5,8) (b). Z=(1,2,3,4,5,6,8)
   (c). Z=(1,2,3,4,5) (d). Z=(1,3,4,6,8)

6. In a relationship, where "A *primary key* is at '*one*' side of the relationship, and the *foreign key* is in the '*many*' side of the relationship":
   (a). One-to-many (b). One-to-one
   (c). Many-to-many (d). All of the above

7. Which one of the following is *Data Query Language* (DQL):
   (a). SELECT (b). INSERT

(c). ROLLBACK (d). UPDATE

8. Choose the correct sequence of *CURSOR* operations:
   (a). DECLARE-OPEN-FETCH-CLOSE (b). OPEN-DECLARE-FETCH-CLOSE
   (c). OPEN-FETCH-DECLARE-CLOSE (d). DECLARE-FETCH-OPEN-CLOSE
9. Which of the following is a volatile storage media:
   (a). Magnetic disk (b). Magnetic tape
   (c). Optical disc (d). Main memory
10. Which of the following is the permission to access a named object in a prescribed manner?
   (a). Privilege (b). Permission
   (c). Roll (d). All of the above

II. ***Indicate whether the following statement is True(T) or False (F) by putting a Tick (√) mark in the brackets provided:*** **(5x2=10)**

1. *Data Catalog* or *Data Dictionary* is a system database that contains a description of the data in the database/metadata (T/F)
2. The smallest unit of data in the relational model is the individual value of *Degree* (T/F)
3. A *primary key* is a column in the table whose purpose is to uniquely identify records from the same table. (T/F)
4. An *INDEX* is a structure that provides faster access to the rows of a table based on the values of one or more columns. (T/F)
5. Encryption is a technique of encoding data so that only authorized users can understand it. (T/F)

SECTION - B

(Marks : 10)

Answer the following questions: **(2 x 5=10)**

1. (a) What is *Logical* and *Physical* data independence?

   OR

   (b) Write the characteristics of data in a database.

2. (a) Define Domain constraint.

   OR

   (b) What are *Entities* and *attributes*?

3. (a)What is Functional dependencies?

   OR

   (b) Write notes on Cartesian product.

4. (a)What is Queries and Sub-queries?

   OR

   (b) What is Operator precedence in SQL?

5. (a) Write the roles of *GRANTING* and *REVOKING* in database security.

   OR

   (b) What are the Database privileges?

(PART : B - DESCRIPTIVE)

(Marks : 50)

The figures in the margin indicate full marks of the questions

1. (a) Describe the term *Database Management System* (DBMS). Briefly explain the *Relational model* of DBMS, support your answer with advantages and disadvantages. **(2+8=10)**

OR

(b) Define the term *Design Constraints*. Explain the five types of constraints and support with appropriate examples. **(2+8=10)**

2. (a) What is meant by the term *Entity-Relation* (ER) Model? Briefly explain components of an E-R Model. **(2+8=10)**

OR

(b) Define the term Enhanced Entity Relationship (EER) Model. Briefly explain *generalization* with an appropriate example. **(2+8=10)**

3. (a) What is meant by intelligent key and non-intelligent key in DBMS? Briefly explain the Boyce-Codd Normalization form. **(2+8=10)**

OR

(b) What is *Relational Algebra*? Briefly explain the *PROJECT* operation in relational algebra with syntax and appropriate example. **(2+8=10)**

4. (a) Explain the term *Structured Query Language* (SQL). Elaborate the types of SQL commands with an appropriate example. **(2+8=10)**

OR

(b) Define Embedded SQL. Essay the *advantages* and *features* of embedded SQL. **(2+8=10)**

5. (a) Explain the dimensions of database security. Describe the three issues that basic security standards technology can ensure. **(3+7=10)**

OR

(b) What are the four types of outage/failure classified by the IEEE? Write and explain various recovery facilities in DBMS. **(2+8=10)**