

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)

1. 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 $Z = A \cup B$?
(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)

(2 x 5=10)

Answer the following questions:

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)**

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