Professional Course (Odd) Examination, 2024

(CBCS)

(3rd Semester)

BACHELOR OF COMPUTER APPLICATIONS

(Database Management Systems)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(PART : A—OBJECTIVE)

(*Marks* : 25)

SECTION—I

(*Marks* : 15)

I. Tick (✓) the correct answer in the brackets provided : 1×10=10

1. Information is _____ data.
   (a) processed ( )
   (b) meta- ( )
   (c) storage ( )
   (d) raw ( )
2. Data about data is normally called as
   (a) directory ( )
   (b) databank ( )
   (c) metadata ( )
   (d) data dictionary ( )

3. The set of all possible values of a data item is

(a) tuples ( )

(b) attribute ( )

(c) domain ( )

(d) entity ( )

4. Which of the following is a bottom-up approach?

(a) Specialization ( )

(b) Generalization ( )

(c) Categorization ( )

(d) All of the above ( )

5. If *A*1 and *A*2 are relational algebraic expressions, then which of the following is *not* a relational algebraic expression?

(a) *A*1 *A*2 ( )

(b) *A*1 *A*2 ( )

(c) *A*1 / *A*2 ( )

(d) *A*1 *A*2 ( )

6. The process of taking a normalized schema and making it non-normalized is

(a) domain key normal form ( )

(b) denormalization ( )

(c) Boyce-Codd normal form ( )

(d) first normal form ( )

7. Which of the following is *not* a DML statement?

(a) UPDATE ( )

(b) ALTER ( )

(c) INSERT ( )

(d) DELETE ( )

8. What will be the result of statement such as SELECT FROM EMPLOYEE WHERE SALARY IN (4000, 8000)?

   (a) All employees whose salary is 4000 and 8000 ( )

   (b) All employees whose salary is between 4000 and 8000 ( )

   (c) All employees whose salary is not between 4000 and 8000 ( )

   (d) All employees whose salary is not 4000 and 8000 ( )

9. _____ can add or delete new users to the system.

   (a) System administrator ( )

   (b) Software developer ( )

   (c) Database administrator ( )

   (d) Programmer ( )

10. Software failures may include failures related to software such as

   (a) operating system ( )

   (b) DBMS software ( )

   (c) application programs ( )

   (d) All of the above ( )

II. State whether the following are *True (T)* or *False (F)* by putting a Tick (✓) mark in the brackets provided : 1×5=5

1. A relationship is an association among several entities.

   (T / F)

2. Overall logical structure of a database can be expressed graphically by an ER diagram.

   (T / F)

3. If two sets of functional dependencies *A* and *B* are equivalent, then either *A* is a subset of *B* or *B* is a subset of *A*.

   (T / F)

4. GROUP BY clause is used for summarizing the content of the column.

   (T / F)

5. Backward recovery is the recovery procedure which is used in case of physical damage.

(T / F)

SECTION—II

(*Marks* : 10)

III. Answer the following questions (short answer-type) : 2×5=10

1. Differentiate between database approach and file-oriented approach.
2. How does attribute inheritance help in developing a system?
3. Define composite key.
4. What are the advantages of SQL?
5. Define archival backup.

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

IV. Answer the following questions : 10×5=50

1. Describe the three-tier ANSI-SPARC architecture in DBMS. 10

OR

Discuss the basic features of object-oriented data model with advantages and disadvantages. 6+4=10

2. *(a)* Explain any five rules formulated by E. F. Codd for RDBMS. 5

   (b) What are the different types of attributes? 5

OR

(a) What do you understand by specialization? Explain with an example. 2+4=6

(b) What are the symbols for displaying an ER model databases schema as an ER diagram? 4

3. What is normalization? Explain the third normal form (3NF) with an example. 2+8=10

OR

Describe the various operations used in relational algebra along with their syntaxes. 10

4. What are the different arithmetic operators in SQL? Explain with examples. 2+8=10

OR

(a) Explain how views are created using an example. 6

(b) Give the syntax of the UPDATE statement. Explain with an example. 4

5. What is shadow paging? Explain how it is performed. 3+7=10

OR

(a) Discuss the different dimensions of database security. 6

(b) What are the different causes of failure? 4

★ ★ ★