

Professional Course (Odd) Examination, 2022

(3rd Semester)

BACHELOR OF COMPUTER APPLICATIONS

Course No. : BCA/3/CC/15

(Database Management Systems)

(Revised)

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)

A. Choose and write the correct answer :

1×10=10

1. In DBMS, data are raw

- (a) news
- (b) documents
- (c) facts
- (d) None of the above

2. The characteristic that allows program-data independence and program-operation independence is called
- (a) data abstraction
 - (b) information abstraction
 - (c) data hiding
 - (d) None of the above
3. The smallest unit of data in the relational model is the individual
- (a) data value
 - (b) row value
 - (c) column value
 - (d) None of the above
4. An attribute, which can uniquely identify each tuple in the relation is called
- (a) derived attribute
 - (b) simple attribute
 - (c) primary key
 - (d) alternate key
5. Given relation $A = \{1, 3, 5, 7, 9\}$ and $B = \{1, 2, 4, 6, 8, 9\}$, what will be the value of $R = A \cap B$?
- (a) $R = \{1, 9\}$
 - (b) $R = \{2, 3, 4, 5, 6, 7, 8\}$
 - (c) $R = \{0\}$
 - (d) $R = \{1, 3, 9\}$

6. Projection operator (π) is a _____ operator in relational algebra that performs a projection operation.

- (a) binary
- (b) unary
- (c) logical
- (d) arithmetic

7. Which of the following is an SQL aggregate function?

- (a) Count()
- (b) Sum()
- (c) Average()
- (d) All of the above

8. In SQL, the term DDL stands for

- (a) data double language
- (b) double data language
- (c) data definition language
- (d) data defining language

9. In _____ data security risk, a malicious third party can perpetrate a computer and modifying the data as it moves between sites.

- (a) data tempering
- (b) eavesdropping and data theft
- (c) falsifying user identities
- (d) password-related threats

10. A _____ is permission to access a named object in a prescribed manner.

- (a) privilege
- (b) role
- (c) privilege and role
- (d) None of the above

B. Indicate whether the following statements are True or False : 1×5=5

1. Data redundancy also can increase the chance of errors.
2. An attribute composed of multiple components, each with an independent existence is called a composite attribute.
3. The queries to the relational algebra are non-procedural.
4. Data types CHARACTER and CHARACTER VARYING are known collectively as character string data types.
5. If the 'WITH GRANT OPTION' is specified, it means that the recipient has the authority to grant the privileges that were granted to him to another user.

SECTION—II

(Marks : 10)

C. Answer the following questions :

2×5=10

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

OR

- (b) Write a note on the types of database users.

2. (a) Define relationship in RDBMS.

OR

(b) What are domain and tuple in RDBMS terminology?

3. (a) Define the term 'Cartesian product'.

OR

(b) What are intelligent keys and non-intelligent keys?

4. (a) Write the advantages of SQL.

OR

(b) Define the term 'VIEWS' in RDBMS.

5. (a) Write a note on the data encryption technique.

OR

(b) How does the logging backup mechanism work?

(PART : B—DESCRIPTIVE)

(Marks : 50)

D. Answer the following questions :

10×5=50

1. (a) What is database? Explain the network model of a database, and support your answer with an appropriate figure.

2+8=10

OR

(b) What are data models? Briefly explain various categories of data models.

2+8=10

2. (a) What is an entity relationship (ER) model? Briefly explain any four components of ER model. 2+8=10

OR

- (b) What is meant by domain constraint in relational data integrity? Elaborate on the four types of domain constraints. 2+8=10

3. (a) Define the term 'normalization'. Name various types of normalization stages. Explain any one with an appropriate example. 2+2+6=10

OR

- (b) What is relational algebra? Briefly explain any four types of relational algebraic operations. 2+8=10

4. (a) Differentiate between queries and sub-queries. Briefly explain the arithmetic operators and logical operators, and support any two of your answer with examples. 2+8=10

OR

- (b) What is meant by cursor in SQL? Briefly explain the operations and positions of the cursor. 2+8=10

5. (a) Why do we require database security? Briefly explain various dimensions of database security. 2+8=10

OR

- (b) Name any four causes of failure in DBMS. Write and explain various recovery facilities in a DBMS. 2+8=10
