

BACHELOR OF COMPUTER APPLICATION
Second Semester
Relational Database Management System
(BCA- 08)

Duration: 3Hrs.

Full Marks: 70

PART A (Objective) =20
PART-B (Descriptive)=50

PART-B (Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

I. Answer the following questions (Any five):

2×5=10

Consider the following relational database: (assume that all employees have distinct names)

Bank_emp (emp_name, street, city)

Works (emp_name, company name, salary)

Bank (bank_name, city)

1. Give a DDL definition in SQL for the database. Identify referential integrity constraints that should hold.
2. Find the names of all employees who work for SBI
3. Find all the employees in the database who live in the same city as the bank for which they work.
4. Find the names, street and cities of residence of all the employees who work for SBI and earn more than Rs 15,000.

Consider the relations:

Tech(Name, Address, Course)

Use some standard relational algebra expressions to do the followings:

5. Print all the information about teachers who are teaching in "DBMS" courses.
6. Print the names and addresses of those teachers who teach "DBMS".
7. Select the teacher with name "Roshan" teaching the course "MIS"

II. Answer the following questions (Any five):

3×5=15

1. What do you understand by the term database? How does it differ from traditional file system?
2. Define the following terms-
 - i. Schema
 - ii. Sub schema
 - iii. Instances
3. Explain the term data independence. Differentiate between logical & physical data independence.
4. Explain the term transitive dependency.
5. Write a short note on Database Recovery.
6. Give the significance and an example of each of the following relationship-
 - i. One-to-one
 - ii. One-to-many
 - iii. Many-to-many
7. How many types of SQL commands are available? Briefly describe each type.

III. Answer the following questions (Any five):

5×5 =25

1. What is the role and purpose of a database administrator? List the tasks performed by him.
2. What is concurrency control? What are the two different strategies for concurrency control? Explain any one.

3. Explain in brief the ACID properties of database transaction.
4. Design an E-R diagram for Hospital Management System. There are many doctors working in the hospital. The doctor's name, contact number and specialization must be recorded. Doctor's charges are computed according to the charge slips they submit. When a patient is admitted to the hospital, his particulars along with the reason for admission must be recorded.

Patients are admitted into rooms if needed. Rooms have certain categories and their per day charges are fixed. There are various labs in the hospital where several tests are conducted on the patients. Each test has a fixed charge.
5. What are the different types of DBMS? Write in brief about each type.
6. Describe the three-schema architecture of data abstraction with a suitable example.
7. Define Normalization. Explain second normal form (2NF) with an example.

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Duration: 20 minutes

Marks – 20

PART-A (Objective)

Time: 20 mins

Total Marks: 20

I. Choose the correct answer:

1. A view of a database that appears to an application program is known as.
(a) Schema (b) Subschema
(c) Virtual table (d) None of these
2. Model based on user's requirement is
(a) Logical Model (b) Conceptual Model
(c) Physical Model (d) None of these
3. The data level which describes how data is actually stored is
(a) Internal Level (b) Conceptual Level
(c) External Level (d) None of these
4. Collection of information stored in a database at a particular moment is:
(a) View (b) Instance
(c) Schema (d) None of these
5. A field in a column of a table is called:
(a) Database (b) Attribute
(c) Tuple (d) Data
6. A field used to access a specific record is called:
(a) Key (b) Domain
(c) Attribute (d) None of these
7. In a relational database referential integrity constraint can be specified with the help of:
(a) Primary Key (b) Secondary Key
(c) Foreign Key (d) All of the above

8. A relation in third normal form is:
- (a) In first normal form also
 - (b) Second normal form also
 - (c) From Transitive Dependencies
 - (d) All of the above
9. Which one is not TRUE?
- (a) A relation is in BCNF if it is in 4NF.
 - (b) BCNF is stricter than 3NF.
 - (c) A relation is in BCNF if every determinant of the relation is a candidate key.
 - (d) All are true.
10. If every non key attribute is functionally dependent on the primary key, then the relation will be in:
- (a) 1NF
 - (b) 2NF
 - (c) 3NF
 - (d) 4NF
11. Which of the following is not a valid operation in relational algebra?
- (a) Select
 - (b) Project
 - (c) MIN
 - (d) Rename
12. GRANT is a command from SQL type:
- (a) DDL
 - (b) DML
 - (c) DCL
 - (d) None of these
13. Which one is correct?
- (a) A SQL query automatically eliminates duplicates.
 - (b) SQL permits attribute names to be replaced in the same relation.
 - (c) A SQL query will not work if there are no indexes on the relation.
 - (d) None of these.
14. This is NOT one of the functions of a database administrator:
- (a) Granting of authorization for data access
 - (b) Schema Definition
 - (c) Interaction with file manager
 - (d) Storage Structure and access method definitions
15. "To preserve the consistency of a database, it is necessary that the transaction be atomic"
- (a) Above statement is TRUE
 - (b) Above statement is FALSE
 - (c) Not specific
16. One of the following steps is not involved in processing a query:
- (a) Parsing and translation
 - (b) Evaluation
 - (c) Optimization
 - (d) Distribution

17. "JOIN creates a new table, by joining two or more tables":
(a) Above statement is TRUE
(b) Above statement is FALSE
(c) Not specific
18. The primary key index does not allow _____ data in a field.
(a) Row (b) Duplicate
(c) Personal (d) None of these
19. _____ of database system is concerned with maintaining of correctness and consistency of data:
(a) Integrity (b) Security
(c) Isolation (d) None of these
20. In the E-R diagram a weak entity set is represented by:
(a) Doubly outlined rectangle (b) Oval
(c) Rectangle (d) None of these
