REV-01
MCA/02/07

2023/06

SET A

MASTER OF COMPUTER APPLICATION
SECOND SEMESTER (REPEAT)
DATABASE MANAGEMENT SYSTEM
MCA-201

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

Objective

Time: 30 mins. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. Data Manipulation Language (DML) is not to:
   a. Create information table in the Database
   b. Insertion of new information into the Database
   c. Deletion of information in the Database
   d. Modification of information in the Database

2. A type of query that is placed within a WHERE or HAVING clause of another query is called:
   a. Super query
   b. Master query
   c. Multi query
   d. Sub query

3. In any hierarchy of data organization, the smallest entity to be processed as a single unit is called:
   a. Data record
   b. Data field
   c. Data File
   d. Database

4. Related fields in a data base are grouped to form:
   a. Data file
   b. Menu
   c. Data record
   d. Bank

5. In SQL, which command is used to remove a stored function from the database?
   a. Remove function
   b. Drop function
   c. Delete function
   d. Erase function

6. In SQL, which command(s) is(are) used to enable/disable a database trigger?
   a. Alter Trigger
   b. Alter table
   c. Alter Database
   d. Modify Trigger

7. Which of the following in not a function of DBA?
   a. Network Maintenance
   b. Routine Maintenance
   c. Schema Definition
   d. Authorization for data access

8. Which of the following is a Data Model?
   a. Entity-Relationship model
   b. Relational data model
   c. Object-Based data mode
   d. All of the above

9. A functional dependency between two or more non-key attributes is called:
   a. Transitive dependency
   b. Partial transitive dependency
   c. Functional dependency
   d. Partial functional dependency

10. Which of the following is the structure of the Database?
    a. Table
    b. Relation
    c. Schema
    d. None of these

11. A collection of interrelated records is called a:
    a. Database
    b. Spreadsheet
    c. Management information System
    d. Text File

12. ROLLBACK in a database is .....statement.
    a. DDL
    b. DML
    c. DCL
    d. TCL

13. The given Query can also be replaced with.....
    SELECT name, course_id FROM instructor, teaches WHERE instructor_ID= teaches_ID;
    a. Select name, course_id from teaches, instructor where instructor_id=course_id;
    b. Select name, course_id from instructor natural join teaches
    c. Select name, course_id from instructor;
    d. Select course_id from instructor join teaches;

14. In the following Query, which of the following can be placed in the Query's blank portion to display the salary from highest to lowest amount, and sorting the employs name alphabetically?
    SELECT * FROM instructor ORDER BY salary ____, name __;
    a. Ascending, Descending
    b. Asc, Desc
    c. Desc, Asc
    d. All of the above

15. Which one of the following refers to the "data about data"?
    a. Directory
    b. Sub Data
    c. Warehouse
    d. Meta Data

16. Rows of a relation are known as the.....
    a. Degree
    b. Tuples
    c. Entity
    d. All the above

17. Which of the following refers to the number of tuples in a relation?
    a. Entity
    b. Column
    c. Cardinality
    d. None of the above

18. In a relation database, every tuples divided into the fields are known as the.....
    a. Queries
    b. Domains
    c. Relations
    d. All the above

19. Which one of the following commands is used to restore the database to the last committed state?
    a. Rollback
    b. Commit
    c. Savepoint
    d. Both a and b

20. Which one of the following refers to the total view of the database content?
    a. Conceptual View
    b. Physical View
    c. Internal View
    d. External View

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Descriptive

Time : 2 hr. 30 mins. **Marks : 50**

[Answer question no.1 & any four (4) from the rest]

1. What is Database? Write Advantages and Disadvantages of database. 2+8=10

2. a) What is Normalization Technique? Explain how 1st NF convert to 2nd NF with example. 5
   b) Justify the statement "BCNF is stronger than 3NF". 5

3. a) What is functional dependency? Explain with an example. 5
   b) What is multivalued dependency? How is multivalued dependency related to 4NF? Explain with suitable example. 5

4. a) Explain conceptual level of DBMS. 4
   b) Draw an ER diagram for the following situation: "An academic institution is affiliated to a University. The institution possesses several departments, each department offers several courses. Each department has its own infrastructure, where several teachers teach several students." Transform your ER diagram into Schema Diagram. 6

5. a) Consider the following relations for a database that keeps a track of business trips of salespersons in a sales office : SALEPERSON (SSN, Name, Start Year, Dept_No) TRIP (SSN, From_City, To_City, Departure_Date, Return_Date, Trip_ID) EXPENSE (Trip_ID, Account#, Amount) Specify the queries in SQL. 5
   (i) Find the details (all attributes of TRIP relation) for trips whose expenses exceeds $ 2000.
   (ii) Find the SSN of salesmen who took trips to 'Honolulu'.
   (iii) Find the total trip expenses incurred by the salesman with SSN = '234-56-7890'.
   b) What is join? Explain inner join and outer join with example. 1+4=5

6. a) What do you understand by the term 'Transaction' in a database? Explain the 2 Phase locking protocol with example. 1+5=6
   b) Explain the working of GROUP BY clause. What is the difference between the WHERE and HAVING clause in SQL? 4

7. Perform the following tasks for the relation R(A, B, C, D, E) whose functional dependency set (FD) is given below : FD: {AB –> C, C –> D, D –> A, BD –> E) 10
   (i) Identify the candidate keys for the relation (R).
   (ii) Identify the highest normal form possessed by the relation (R). Justify your answer.
   (iii) Normalize the relation (R).

8. a) Explain ACID properties of Database. 5
   b) Explain Role of Database Administrator. 5

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