B.C.A. Semester-III (Honours) Examination, 2022-23

BACHELOR OF COMPUTER APPLICATION

Course ID : 33312 **Course Code : BCA/CC-06**

Course Title : Database Mangement Systems

Time : 3 Hours Full Marks : 80

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP–A

A. Answer **all** the questions: 1×10=10

1. In which of the following formats data is stored in the database management system?
   a) Image
   b) Text
   c) Table
   d) Graph
   e) None of these
2. Which of the following is not an example of DBMS?
   a) MySQL
   b) Microsoft Access
   c) IBM DB2
   d) Google
   e) None of these
3. _____is a hardware component that is most important for the operation of a database management system.
   a) Microphone
   b) High speed, large capacity disk to store data
   c) High-resolution video display
   d) Printer
   e) None of these
4. _____ is a set of one or more attributes taken collectively to uniquely identify a record.
   a) Primary Key
   b) Foreign key
   c) Super key
   d) Candidate key
   e) None of these
5. _____ indicates the maximum number of entities that can be involved in a relationship.
   a) Greater Entity Count
   b) Minimum cardinality

c) Maximum cardinality

d) ERD

e) None of these

6. Which of the following represents a query in the tuple relational calculus?

a) { } {P(t) | t }

b) {t | P(t)}

c) {t | P() | t

d) All of the mentioned

e) None of these

7. Which of the following establishes a top-to-bottom relationship among the items?

a) Relational schema

b) Network schema

c) Hierarchical schema

d) All of the mentioned

e) None of these

8. Which of the following is the subset of SQL commands used to manipulate Oracle Structures, including tables?

a) Data Described Language

b) Data Retrieval Language

c) Data Manipulation Language

d) Data Definition Language

e) None of these

9. What does an RDBMS consist of?

a) Collection of Records

b) Collection of Keys

c) Collection of Tables

d) Collection of Fields

e) None of these

10. What is information about data called?

a) Hyper data

b) Tera data

c) Meta data

d) Relations

e) None of these

GROUP–B

B. Answer any **ten** questions: 2×10=20

1. Explain 3-tier Architecture.

2. What do you mean by Complex attribute?

3. Explain Referential Integrity Constraint.

4. Write different SQL aggregate functions.

5. Distinguish between Candidate Key and Super Key.

6. Explain OLTP.

7. Explain different Cardinalities in ERD Model.

8. Why do we use Indexing?

9. What is meant by lossy-join decomposition?

10. Define the terms: (i) DCL (ii) DQL

11. What is Functional Dependency?

12. What is the difference between Natural Join and Inner Join?

13. Define Query Optimization.

14. Give the advantages of DBMS over traditional file system.

15. Let R (A, B, C, D) Relation have two candidate keys A and B, How many Super Key Possible?

GROUP–C

C. Answer any **four** questions: 5×4=20

1. How Normalization can help to reduce the different types anomalies?

2. Write different between Drop and Truncate? Write the syntax of Create command.

3. With the help of suitable example explain natural join and outer join.

4. Write a short note of Partial Dependency and Transitive Dependency.

5. Draw a ERD of ICIS College Teaching-Learning Environment.

6. With the help of suitable example explain primary and secondary indexing.

GROUP–D

D. Answer any **three** questions: 10×3=30

1. What are the requirement of join operation? Explain Project-Join Normal Form (PJ/NF)

2. What are the advantages and disadvantages of the Distributed Database? Write a short note on Fragmentation.

3. Consider the following tables:

   Employee (Emp_no, Name, Emp_city)

   Company (Emp_no, College_name, Salary)

   Write the following queries in SQL

   (i) Write a query to display employee name, employee city, college name.

(ii) Write a query to display emp_name, employee city; company name and salary of the employee whose salary > 50000

(iii) Write a query to display all the employees working in 'ICIS' College.

4. What is the importance of Normalization? What is the Highest Normal Form of the relation R (A, B, C, D, E) FD: { AB→C, C→DE, E→F, F→A }

5. For the following functional dependencies, find the Minimal Cover (irreducible set)

{ A→B, C→B, D→ABC, AC→D }

6. Teacher (tid, tname, address)

Student (sid, sname, course)

Teaching (tid, sid)

a) Write a query in relational algebra to display tname of Teacher.

b) Write a query in relational algebra to display sname of Student who take DBMS Course.

c) Write a query in relational algebra to display tid of Teacher who teaching some Course.

d) Write a query in relational algebra to display tname of Teacher who teach Database Course.

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