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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

MCA (Integrated)

SEM: IV - THEORY EXAMINATION (2025 - 2026)

Subject: Database Management System

Time: 3 Hours

Max. Marks: 100

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

20

1. Attempt all parts:-

- (1.1) Which one of the following is a type of Data Manipulation Command? [CO1, K1] 1
- (a) Create
 - (b) Alter
 - (c) Delete
 - (d) All of the above
- (1.2) Which one of the following is commonly used to define the overall design of the database?[CO1, K1] 1
- (a) Application program
 - (b) Data definition language
 - (c) Schema
 - (d) Source code
- (1.3) What is the difference between a PRIMARY KEY and a UNIQUE KEY? [CO2, K2] 1
- (a) Primary key can store null value, whereas a unique key cannot store null value.
 - (b) We can have only one primary key in a table while we can have multiple unique keys
 - (c) Primary key cannot be a date variable whereas unique key can be
 - (d) None of these
- (1.4) What does the check constraint do in SQL [CO2, K2] 1
- (a) It ensures that values in a column are unique
 - (b) It ensures that values in a row are unique
 - (c) It establishes relationship between two tables
 - (d) it gives a condition that the columns must satisfy

- (1.5) Which of the following is used to fetch all the values [CO3, K1] 1
- (a) Set Difference
 - (b) Intersection
 - (c) Union
 - (d) Cartesian Product
- (1.6) Which of the following SQL queries will return only the rows that are present in the "employees" table but not in the "managers" table?[CO3, K3] 1
- (a) SELECT * FROM employees UNION SELECT * FROM managers;
 - (b) SELECT * FROM employees INTERSECT SELECT * FROM managers;
 - (c) SELECT * FROM employees MINUS SELECT * FROM managers;
 - (d) SELECT * FROM employees WHERE EXISTS (SELECT * FROM managers);
- (1.7) What is the full form of PL in PL/SQL? [CO4, K1] 1
- (a) Programming Language
 - (b) Procedural Language
 - (c) Programming Logic
 - (d) Procedural Logic
- (1.8) PL/SQL Variable needs to be declared in the – [CO4, K1] 1
- (a) Variable Section
 - (b) Declaration Section
 - (c) Initialization Section
 - (d) None of the above
- (1.9) Which of the following format is supported by MongoDB? [CO5, K1] 1
- (a) SQL
 - (b) XML
 - (c) BSON
 - (d) All of the mentioned
- (1.10) Which of the following operation adds a new document to the users collection? [CO5, K1] 1
- (a) add
 - (b) insert
 - (c) truncate
 - (d) drop

2. Attempt all parts:-

- (2.1) Define the term Database Management System.[CO1, K2] 2
- (2.2) List the aggregate functions supported by SQL. [CO2, K1] 2
- (2.3) Discuss the need of 'DISTINCT' keyword in SQL.[CO3, K2] 2
- (2.4) Define Atomicity [CO4, K1] 2
- (2.5) Define MongoDB Collection. [CO5, K2] 2

SECTION-B

30

Answer any one of the following:-

- (3.1) Explain Generalization and Specialization with suitable example. [CO1, K2] 6
- (3.2) Discuss the commands insert , update and delete with the help of examples. [CO1, K2] 6

Answer any one of the following:-

- (3.3) Write short notes on- [CO2, K2] 6
(i) Primary Key (ii) Candidate key (iii) Superkey
- (3.4) Differentiate lossless and lossy join decomposition with suitable example. [CO2, K2] 6

Answer any one of the following:-

- (3.5) Discuss SUM(), AVG(), MIN(), MAX() and COUNT(*). [CO3, K3] 6
- (3.6) Provide an example of how the ANY operator can be used to filter results based on a dynamic set of values. Discuss how ANY differs from IN in terms of functionality and provide a sample query. [CO3, K2] 6

Answer any one of the following:-

- (3.7) What are the advantages of concurrent executions over serial execution?[CO4, K2] 6
- (3.8) Explain COMMIT and ROLLBACK operations with the help of examples.[CO4, K2] 6

Answer any one of the following:-

- (3.9) Describe the methods count(), sort(), limit() with the help of examples. [CO5, K2] 6
- (3.10) Explain the term flexible schema with the help of an example. [CO5, K2] 6

SECTION-C

50

4. Answer any one of the following:-

- (4.1) Explain the architecture of DBMS. Explain One-tier,two-tier and three tier architecture with suitable diagram. [CO1, K2] 10
- (4.2) Explain the constraints 1:1, 1:N, N:M with examples. [CO1, K2] 10

5. Answer any one of the following:-

- (5.1) Explain Normalization and all normal forms with examples.[CO2, K2] 10
- (5.2) Write short notes on following- 10
(i) Group by (ii) Having (iii) Order by [CO2, K2]

6. Answer any one of the following:-

- (6.1) Discuss the importance of joins in relational databases. Explain the concept of joining tables and the different types of joins available in SQL. Provide examples illustrating each type of join. [CO3, K3] 10
- (6.2) Discuss the significance of the LIKE, BETWEEN & DISTINCT operator in SQL queries. Explain how LIKE enables pattern matching for text data and discuss its practical applications in data retrieval and analysis. [CO3, K2] 10

7. Answer any one of the following:-

- (7.1) Define conflict, how can we resolve it? Explain with example. [CO4, K2] 10
- (7.2) Explain the use and importance of OPEN C1, CLOSE C1 and FETCH C1 [CO4, K2] 10

8. Answer any one of the following:-

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| (8.1) | Write Short notes on 'Improved Performance', 'Flexibility', 'No Redundancy' and 'Large Scale Data Mangement' [CO5, K2] | 10 |
| (8.2) | Differentiate between BASE and ACID Properties. [CO5, K2] | 10 |

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