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Subject Code:- AMCA0202

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MCA

SEM: II - CARRY OVER THEORY EXAMINATION JUNE 2023 Subject: Database Management System

Time: 3 Hours

Printed Page:- 04

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

1. Attempt all parts:-

1-b.

- 1-a. The values of a ______ are distinct for each individual entity in the collection. (CO1)
 - (a) Composite Attribute
 - (b) Key attribute
 - (c) complex attribute
 - (d) derived attribute

A relationship type _____ (CO1)

- (a) may have attributes
- (b) must have attributes
- (c) Cannot have attributes
- (d) None of the above

1-c. Which is a join condition contains an equality operator: (CO2)

- (a) Equijoins
- (b) Cartesian

20

1

Max. Marks: 100

1

1

- (c) Natural (d) Left 1-d. How many Primary keys can have in a table? (CO2) 1 (a) Only 1 (b) Only 2 (c) Depends on no of Columns (d) Depends on DBA In Lossless Join Decomposition (CO3) 1 1-e. (a) Information is lost (b) Information may be lost (c) No information is lost (d) None of the above (CO3) 1-f. Which of the following is not an inference rule _ (a) Augmentation Rule (b) Union Rule (c) Additive rule (d) None of the above Which of the following is not a state of the transaction? (CO4) 1-g. 1 (a) Active (b) Waiting (c) Partially Committed (d) Aborted We can swap _ 1-h. _ operations. (CO4) 1 (a) Non Conflicting (b) Conflicting (c) Same
 - (d) None of the above
- 1-i.A system is in a _____ state if there exists a set of transactions such that every1transaction in the set is waiting for another transaction in the set. (CO5)
 - (a) Idle
 - (b) Waiting
 - (c) Deadlock
 - (d) Ready

- 1-j. Which of the following is not a promise of distributed database? (CO5)
 - (a) Network Transparency
 - (b) Replication Transparency
 - (c) Fragmentation Transparency
 - (d) None of the above

2. Attempt all parts:-

- 2.a. List the different types of database users. (CO1)
- 2.b. Explain Candidate Key with an example. (CO2)
- 2.c. Up to which Normal Form are relations Normalized so that efficiency is 2 maintained? (CO3)

1

2

2

30

6

6

6

50

- 2.d. Define Casecadeless Schedule. (CO4)
- 2.e. Define Timestamp. (CO5)

SECTION B

3. Answer any five of the following:-

- 3-a.Define the terms DDI and DML. (CO1)63-b.Define Logical Schema and explain in detail with an example. (CO1)63-c.Explain the term EquiJoin. (CO2)6
- 3-d. Write SQL statements for Distinct , ORDER by. (CO2)
- 3.e. What are functional dependencies? Explain with an example. (CO3)
- 3.f. Explain all the anamalies that can occur in a database with examples.(CO4)
- 3.g. What is the Difference between OLTP and OLAP. Discuss their advantages and 6 disadvantages. (CO5)

SECTION C

4. Answer any one of the following:-

- 4-a. Explain the Network and hierarchical Data Model. (CO1) 10
- 4-b. Define entity relationship diagram and construct ER- diagram for Hospital 10 Management System. (CO1)

5. Answer any one of the following:-

- 5-a. Explain aggregate functions. Illustrate all aggregate functions with the help of 10 suitable table and queries. (CO2)
- 5-b. Define union compatibility and demonstrate on STUDENT_1 and STUDENT_2 10 tables. (Assume attributes of given tables) (CO2)
- 6. Answer any one of the following:-

- 6-a. Discuss the purpose of normalization & normalization process. What are the 10 normal forms? Explain with suitable example. (CO3)
- 6-b. Determine the closer of the following set of functional dependencies for a 10 relational scheme R (A,B,C,D,E) ,F= { $A \rightarrow BC$, CD $\rightarrow E$, B $\rightarrow D$, E $\rightarrow A$ }. List out the candidate keys of R. (CO3)

7. Answer any one of the following:-

- 7-a. Differentiate between Distributed Database and client server computing. (CO4) 10
- 7-b. Discuss the problems of deadlock and starvation, and the different approaches 10 to dealing with these problems. (CO4)

8. Answer any one of the following:-

- 8-a. Define a schedule? Define the concepts of recoverable, cascade less, and strict 10 schedules, and compare them in terms of their recoverability. (CO5)
- 8-b. Discuss the concurrency control with lock based protocols with suitable 10 example. (CO5)

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