Enrolment No. 21MCA026

S4(PCA02C09)CSE

MCA 2nd Semester Mid Term Examination- 2022
Name of Subject: Database Management System
Paper Code: PCA02C09

Full Marks:20 **Time: 1 Hours**

The figures in the margin indicate full marks for the questions

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Attempt all the questions

1.a) What do you mean by Database System? (1*4)=4
b) Define OLTP?
c) Who are the workers behind the scene of DBMS?
d) Give examples of user-defined operations of DBMS.

2. a) What are the different types of Database? (2*4)=8
b) Explain the categories of Database Users.
c) What are the differences between Database Schema, Instance & State?
d) Discuss the categories of data models.

3. a) Explain main Characteristics of the Database Approach? (4*2)=8
b) Table name: **products**

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
1	Chais	1	1	10 boxes	18
2	Chang	1	1	24 bottles	19
3	Aniseed Syrup	1	2	550 ml	10
4	Cajun Seasoning	2	2	48 jars	22
5	Aumbo Mix	2	3	36 boxes	18
6	Boysenberry Spread	3	2	12 jars	25

Write SQL statement for the followings:

i. Write SQL statement to create the above table.
ii. Find out the product details those are under supplierID '1' and categoryID '2'.
iii. Insert following row in the above table:

ProductID	ProductName	SupplierID	CategoryID	Unit	Price
7	Crocin	3	1	20 boxes	85

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MCA 2nd Semester End Term Examination- 2022

DATABASE MANAGEMENT SYSTEM

Paper Code: PCA02C09

Full Marks: 50 **Time: 2 Hours**

The figures in the margin indicate full marks for the questions

(Answer to all the questions)

Group - A

1. Answer to the following questions: (5 x 2) =10

a) What is Super key and Candidate key?
b) What is immediate and inplace update?
c) Write down the SQL query for the following statement:

$\pi_{FNAME, LNAME, STATE}(\sigma_{DNO=6}(STUDENT))$

d) What are the transaction boundaries?
e) Why concurrency control is required?

Group - B

2. a) Why recovery is required? Explain different types of transaction failure. (4+3+3)=10
b) Explain ACID properties of a transaction.
c) What is transaction log? What are the typical kinds of records in a transaction log?

3. a) How a transaction moves through its execution states? Illustrate with a suitable diagram. (4+2+4)=10
b) Why Concurrency Control is needed?
c) Explain incorrect summary problem and lost update problem with example.

Group - C

4. a) Convert the following table into 3NF (Show all steps). 5

Proj_num	Proj_name	Emp_num	Emp_name	Designation	Charge/hour	Total_hr
Proj_01	ORS	101	David	Engineer	450	10
		102	Shane	Clarke	380	7
		105	Scott	Driver	300	12
Proj_02	LMS	103	Smith	Programmer	450	11
		104	Dale	Developer	430	10
		108	Scott	Teacher	400	12

b)

Table: - **stud**

Stud_id	Stud_name	State	rank
1001	Ram	MP	103
1105	Sachin	Bihar	109
2006	Rahul	WB	1811
3017	Rakesh	MP	151
1015	Pradip	Bihar	312
4123	Akash	WB	531

Table: - **adm**

Stud_id	Allot_nit	Cat	Admit
1001	NITT	OPEN	YES
1105	NITT	OBC	YES
2006	NITA	OPEN	NO
3017	NITW	SC	YES
4123	NITA	ST	YES