



Continuous Assessment Test (CAT) – I - August 2024

Programme	:	Master of Computer Applications	Semester	:	Fall Semester 2024-2025
Course Code & Course Title	:	PMCA503L & Database Systems	Class Number	:	CH2024250103011
Faculty	:	Dr.M.Sandhya	Slot	:	D1+TD1
Duration	:	1.5 hrs	Max. Mark	:	50

General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information.
- Only non-programmable calculator without storage is permitted

Answer all questions

Q. No	Sub Sec.	Description	Marks
1.		<p>Suppose you have a university database with the following entity sets:</p> <p>Student (Student, Course_name, Course_code, Faculty_ID)</p> <p>School (School_ID, School_name, Faculty_ID)</p> <p>Department (Dept_name, Dept_no)</p> <p>Faculty (Faculty_ID, Faculty_Name, Phone_no, Email)</p> <p>Explain how the tuples are organized in Relational, Network and hierarchical models for above scenario. [4+3+3 marks]</p>	10
2.		<p>For a football game, an application has to be developed for the games they play, and the players in each team. In the design, we want to capture the following:</p> <ul style="list-style-type: none"> • We have a set of teams, each team has an ID (unique identifier), name, main stadium, and to which city this team belongs. • Each team has many players, and each player belongs to one team. Each player has a number (unique identifier), name, DoB, start year, and shirt number that he uses. • Teams play matches, in each match there is a host team and a guest team. The match takes place in the stadium of the host team. • For each match we need to keep track of the following: <ul style="list-style-type: none"> ➤ The date on which the game is played ➤ The final result of the match ➤ The players participated in the match. For each player, how many goals he scored, whether or not he took yellow card, and whether or not he took red card. ➤ During the match, one player may substitute another player. We want to capture this substitution and the time at which it took place. 	

- Each match has exactly three referees. For each referee we have an ID (unique identifier), name, DoB, years of experience. One referee is the main referee and the other two are assistant referee.

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Design an ER diagram to capture the above requirements.

3.

A private organization has approached you for developing a software that automates the process of inventory management. As a part of the development team, you are assigned with the task of designing a database system environment. Identify and justify the various components that constitutes a database system environment and the types of computer system software with which the DBMS interacts. Also list out the different roles and responsibilities of the people involved.

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4.

Create the following tables.

- DEPARTMENT** (dept_no, dept_name, location).
- EMPLOYEE** (emp_no, emp_name, DOB, address, doj, mobile_no, dept_no, salary).

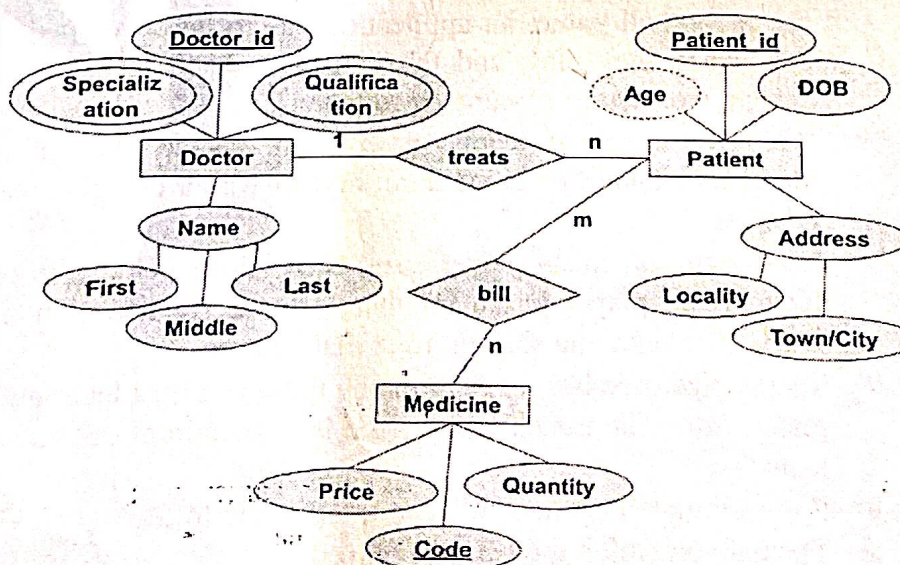
Write SQL queries for solving the following: (5x2=10 Marks)

- Display the names of the employees working for CSE department
- Display the name of the employees whose salary is less than the average salary of CSE department.
- Count the number of employees of department where "John" works.
- Display names of employees whose salary is greater than the employee emp_no=1234.
- Display the names of employees whose salary is greater than 1 Lakh.

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5.

Map the given ER diagram to a relational schema and state the steps in the mapping process.



Hospital Management System

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