Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

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Uni. Roll No. .....

Program: B.Tech. (Batch 2018 onward)
Semester: 4th
Name of Subject: Database Management System
Subject Code: PCIT-104
Paper ID: 16233

EVENING

25 JUN 2022

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A **[Marks: 02 each]**

Q1.

a) Describe the types of keys used in SQL database.
b) Define different types of Relational Calculus.
c) How Data Marts are used for creating Data Warehouse?
d) Differentiate between Inner join and Outer join.
e) Where NoSQL database is preferable over a relational database?
f) Write a syntax of table creation and insertion command in SQL.

Part – B **[Marks: 04 each]**

Q2. What is Data Warehousing? Explain the advantages of Data Warehousing.

Q3. Write a short note on applications of spatial and multimedia databases.

Q4. Elaborate the significance of ACID properties of database management system with the help of some examples.

Q5. Define the term NoSQL with example? Analyze why NoSQL database is used by facebook and google applications.

Q6. Design an ER diagram for student enrollment system. Take student, teacher and subjects as entities.

P.T.O.

Q7. Consider the insurance database as mentioned below, where the primary keys are underlined. Construct the following SQL queries for this relational database.

Note: The participated relation relates drivers, cars, and accidents.

person (driver_id, name, address)

car (license, model, year)

accident (report_number, date, location)

owns (driver_id, license)

participated (driver id, license, report_number, damage amount)

a. Find the total number of people who owned cars that were involved in accidents in 2009.

b. Add a new accident to the database; assume any values for required attributes.

c. Delete the Mazda (*car model*) belonging to "John Smith" (*person name*) .

Part – C **[Marks: 12 each]**

Q8. Define normalization. Why we need to normalize a database in SQL? Briefly discuss the insert, delete and update anomalies, if relations are not in 2NF.

OR

Compare different types of data models used in database management systems.

Q9. Analyze various recovery techniques used in database management system. How to implement these techniques in SQL Databases?

OR

a) Suppose that we have a relation marks(ID, score) and we wish to assign grades to students based on the score as follows: grade F if score < 40, grade C if 40 ≤ score < 60, grade B if 60 ≤ score < 80, and grade A if 80 ≤ score. Write SQL queries to do the following:

i. Display the grade for each student, based on the marks relation. **(3 marks)**

ii. Find the number of students with each grade. **(3 marks)**

b) Design a database Schema for "E-Commerce website" using SQL queries and ER diagram. **(6 marks)**

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