

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

MORNING

[Total No. of Questions: 09]

04 OCT 2023

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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

Scientific calculator is NotAllowed

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) Differentiate between Inner join and Outer join.
- b) How Data Marts are used for creating Data Warehouse?
- c) Write a syntax for outer join with example.
- d) Explain the different applications of Data Mining.
- e) Describe the role of shadow paging in recovery systems.
- f) Write a syntax of insert and update command in SQL.

Part – B

[Marks: 04 each]

- Q2. Write a short note on applications of spatial and multimedia databases.
- Q3. Explain the ACID properties in the context of transaction management
- Q4. Discuss the concept of functional dependencies and their role in database design.
- Q5. Analyze various recovery techniques used in database management system.
- Q6. Distinguish between Data Definition Language (DDL) and Data Manipulation Language (DML) in the context of database management. Include practical examples to illustrate how each language is used.
- Q7. Design a set of database tables that exemplify the principles of Boyce-Codd Normal Form (BCNF), and Fourth Normal Form (4NF) in the context of a DBMS. Provide a

practical example to illustrate the application of these normalization forms in database design

Part – C

[Marks: 12 each]

- Q8.** What is Database Recovery? Explain the different types of database failure and types of recovery techniques with advantages and disadvantages.

OR

Examine and contrast various data models utilized within Database Management Systems for effective database design.

- Q9.** Examine the phenomenon of deadlock in multi-process or multi-threaded systems, delving into the underlying causes and ramifications. Subsequently, present a comprehensive and step-by-step elucidation of the deadlock detection and resolution process, accompanied by a significant real-world example that highlights the practical application of these concepts.

OR

Consider a database for an online bookstore that includes tables for books, authors, and customers. Write SQL commands to perform the following tasks:

1. Create a table named "Books" with columns for book ID, title, author ID, price, and quantity in stock.
 2. Insert a new book into the "Books" table. The book is titled "The Great Gatsby" by F. Scott Fitzgerald, with a price of \$12.99 and 50 copies in stock.
 3. Create a table named "Authors" with columns for author ID, name, and biography.
 4. Insert a new author into the "Authors" table. The author is F. Scott Fitzgerald, and his biography should be provided.
 5. Create a table named "Customers" with columns for customer ID, name, email, and address.
 6. Insert a new customer into the "Customers" table. Include their name, email address, and physical address.
 7. Write a SQL query to retrieve the titles & prices of all books in the "Books" table.
- Please provide the SQL commands for each of the above tasks, along with a brief explanation of what each command does.
