

BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-III INFORMATION TECHNOLOGY : WINTER : 2024
SUBJECT: DATABASE MANAGEMENT SYSTEMS

Day : Monday
Date : 09/12/2024

W-29244-2024

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data **WHEREVER** necessary.
- 4) Draw neat diagrams **WHEREVER** necessary.

Q. 1 State the features of Extended ER diagram. Draw an Extended ER diagram for a library system. State your assumptions, if any, for the system under consideration. (10)

OR

Q. 1 Comment on the statement "A major purpose of a database system is to provide users with an abstract view of the data". (10)

Q. 2 What is normalization? When is relation schema R said to be in fourth normal form (4NF)? Elaborate with an example. (10)

OR

Q. 2 Justify the statement-"Integrity constraints maintain the quality of information". Categorize and elaborate the types of integrity constraints that can be applied in a database management system. (10)

Q. 3 Consider the following schema for Salon appointment and state SQL queries for the questions below: (10)

(Services could be "haircut", "massage" etc)

Clients (CID, name, phone)

Staff (SID, name)

Appointments (CID, data, time, service, SID)

- i) Find the appointment time and client name of all appointments for staff member Hari on Feb15. Find Names of clients serviced by Suman and what services they have availed.
- ii) Find the names of all staff who have attended the clients Meena, Raghu and Hiten.
- iii) Find the names of all staff members who have provided haircut services on date 2 May.
- iv) Find the names of all client who have availed both haircut and head massage services from salon.

OR

Q. 3 Comment on the statement- "Triggers are stored programs which are automatically executed or fired when some event occur". Elaborate with the syntax and example of trigger. Explain the significance of every clause in the definition of trigger. (10)

Q. 4 What does the parsing and translation phase of query processing aim to achieve? Elaborate the process of parsing and translation with the processes that follows this phase. (10)

OR

P.T.O.

Q. 4 What are equivalent relational algebra expressions? What is the role of this equivalence? What are equivalence rules? Exemplify any 6 equivalence rules. (10)

Q. 5 During its execution, a transaction passes through several states, until it finally commits or aborts. List all possible sequences of states through which a transaction may pass. Explain why each state transition may occur. (10)

OR

Q. 5 What is Multi-Version Concurrency Control? How does Multi-Version Concurrency Control in DBMS work? State the various Multi-Version Concurrency Control schemes and explain any one. (10)

Q. 6 What is SQL injection? Discuss the process and damage possible by SQL injection attack. (10)

OR

Q. 6 Why is Big Data Important? Discuss any real time application where Big Data is being put to use currently. (10)

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