

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - III CS&E-A&M : WINTER : 2023
SUBJECT : DATABASE MANAGEMENT SYSTEMS

Day : Wednesday

Date : 13-12-2023

W-23939-2023

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) Use of non – programmable **CALCULATOR** is allowed.
- 4) Assume suitable data if necessary.

- Q.1**
- a) Explain the terms candidate key, primary key, foreign key and super key. (05)
 - b) Distinguish between file management system and database management system. (05)

OR

Discuss the role of DBA. Describe different types of attributes with example. (10)

- Q.2**
- Supreme products manufacture products like pressure cookers, cook wares, water purifiers, food processors etc. The company markets its product to wholesalers all over the country and dealers sell them to customer. The company has five regional offices. Sales persons contact dealers and explain about products, incentives offered, pairing programs for wholesalers and demonstration for customers etc. Dealers place orders with the sales persons attached with the regional office of their location. After receiving goods, they make payments, which may be in installments. Company would like to develop a system to monitor sale of different products, performance of salespersons and order from wholesalers. (10)

Do the following:

- (i) Identify entities, attributes and relationship.
- (ii) Draw an E-R diagram.

OR

Draw the ER diagram of a University management system and explain. (10)

- Q.3**
- Write sql syntax for creating table EMP (EMPNO, ENAME, SALARY, JDATE, DIS). (10)

Write sql syntax for insert two rows in table, delete one row from table, update salary and view whole table.

What is the different operation performing using DML Explain?

OR

Consider the following employee database, Primary Keys are underline. (10)

Employee (employee-name, street, city)

Works (employee-name, company name, salary)

Company (company name, city)

Manages (employee-name, manager-name)

Write down appropriate SQL statement for the following queries:

- a) Find the name of all employees who work for 'XYZ'.
- b) Find all employees in the database who earn more than the average salary of all employees of their company.
- c) Find all employees in the database who live in the same cities as the companies for which they work.
- d) Find all employees in the database who live in the same cities and on the same street as do their managers.
- e) Find the company that has the smallest payroll.

P.T.O

Q.4 a) Consider the relation $R = \{A, B, C, D, E\}$ and the set of functional dependencies: (05)
 $F = \{AD \rightarrow B, B \rightarrow C, C \rightarrow D\}$
Find out the candidate key.

b) What are the various states of a transaction? Explain with a state diagram. (05)

OR

a) Consider the relation $R = \{A, B, C, D, E, F, G, H, I, J\}$ and the set of functional dependencies: (05)

$F = \{AB \rightarrow C, A \rightarrow DE, B \rightarrow F, F \rightarrow GH, D \rightarrow IJ\}$
Decompose R into 3NF.

b) Explain with example "BCNF is stricter than 3NF". (05)

Q.5 Explain any 4 Types of Relational operations with example? (10)

OR

a) What is 2-phase locking protocol? How does it guarantee serializability? (05)

b) Explain log-based recovery and checkpoints. (05)

Q.6 a) Explain architectural model for distributed DBMS. (05)

b) Compare and Contrast Extendible Hashing with Linear Hashing? (05)

OR

Draw and Explain Client-Server Architecture? (10)

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