

Enrollment No.

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M.TECH (CYBER SECURITY)
II YEAR, III SEMESTER EXAMINATION
DATABASE MANAGEMENT SYSTEMS

[Time : 03:00 Hours]

[Max. Marks : 70]

NOTE: ATTEMPT ALL THE QUESTIONS AS PER INSTRUCTIONS.

QUESTION NO.-1: ATTEMPT ANY FOUR PARTS.

(4*3=12)

a)	What is the purpose of a Database Management System?
b)	Define Data Model. Explain the importance of data models.
c)	Name the ACID properties of a transaction.
d)	What are the advantages of distributed databases?
e)	Write the recovery techniques used in DBMS.
f)	Differentiate between strong and weak Entity set in the ER diagram with examples.

QUESTION NO.-2: ATTEMPT ANY THREE PARTS.

(3*4=12)

a)	What is a JOIN in SQL? Explain its purpose and importance in relational database systems.
b)	Discuss ACID properties of RDBMS.
c)	What is meant by integrity constraint? Explain different types of Integrity constants.
d)	What is Data Abstraction? Explain about different views of data.

QUESTION NO.-3: ATTEMPT ANY THREE PARTS.

(3*6=18)

a)	Who is a DBA? What are the responsibilities of a DBA? Mention some responsibilities of a Database Administrator.
b)	Explain the purpose of aggregate functions and list the aggregate functions supported by SQL with suitable examples.
c)	Differentiate stored procedures and user-defined functions in SQL?
d)	Explain strict two-phase locking protocol and rigorous two-phase locking protocol

QUESTION NO.-4: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	Explain Selection, Projection, Rename, division and Cartesian product operations in relational algebra with a suitable example.
b)	What is the candidate key? In the given relation R (A, B, C, D, E, F) Functional Dependencies are as follows- $C \rightarrow F$, $E \rightarrow A$, $EC \rightarrow D$, $A \rightarrow B$ Find the candidate key and super key in the given relation.
c)	Analyze the advantages and disadvantages of using a DBMS compared to a traditional file system.

QUESTION NO.-5: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	What is normalization and why it is needed? What conditions are required for a relation to be in 2NF, 3NF and BCNF explain with examples?
b)	What is concurrency control? How is it implemented in DBMS? Illustrate with a suitable example.
c)	What is the Entity-relationship model how it is different from the relational model? Construct an ER model for the car rental company database the details are as: A car rental company maintains a database for all-vehicles in its current fleet. For all vehicles, it includes the vehicle identification number, license number, manufacturer, model, date of purchase and colour. Special data are included for certain types of vehicles. Trucks: cargo capacity Sports car: horsepower, renter age requirement