H.T No

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(An Autonomous Institution)

Regulations: A22

Code No:9FC04 **Date: 12-August-2024 (FN)**

B.Tech II-Year II- Semester External Examination, August-2024 (Regular)

DATA BASE MANAGEMENT SYSTEMS (CSE,IT,ECM,CS,AIML,DS,IOT)

Time: 3 Hours **Max.Marks:60**

Note: *a) No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Missing data can be assumed suitably.

Bloom's Cognitive Levels of Learning (BCLL)

Remember	L1	Apply	L3	Evaluate	L5
Understand	L2	Analyze	L4	Create	L6

Part - A Max.Marks: 6x2=12

ANSWER ALL QUESTIONS, EACH QUESTION CARRIES 2 MARKS.

		BCLL	CO(s)	Marks
1	What are the 3 levels of data abstraction in Database Systems?	L1	CO1	[2M]
2	Define selection and projection operations in relational algebra.	L2	CO2	[2M]
3	Write an SQL query to retrieve the first_name and last_name columns from a table named Employee.	L5	CO3	[2M]
4	What is a functional dependency (FD) in a database?	L1	CO4	[2M]
5	Define serializability in the context of transaction management.	L3	CO5	[2M]
6	Define file organization in databases and give an example.	L1	CO6	[2M]

Part – B Max.Marks: 6x8=48

ANSWER ALL QUESTIONS. EACH QUESTION CARRIES 8 MARKS.

		BCLL	CO(s)	Marks
7.	Describe the overall structure of a database system. And Discuss the functions of storage manager and the query processor.	L4	CO1	[8M]
	OR			
8	Explain the roles of Data Definition Language (DDL) and Data Manipulation Language (DML) in database systems. Provide SQL examples for each.	L3	CO1	[8M]
9.	**a)** Explain the significance of set operations (union, intersection, set difference) in relational algebra, with examples.	L2	CO2	[8M]
	b) Describe the purpose of views in a relational database. Provide an example of creating a view and explain how it can be used in queries.			
	OR			
10	**a)** Define Tuple relational calculus and Domain relational calculus. Provide examples to illustrate the differences between them.	L1	CO2	[8M]
	b) Describe Integrity Constraints in detail.	L3		
11	Explain the concept of nested queries in SQL and provide an example of how they can be used to retrieve data from multiple related tables effectively.	L3	CO3	[8M]
	OR			
12	Explain how SQL handles NULL values in comparisons and aggregations, and discuss strategies for managing NULL values effectively in database queries	L2	CO3	[8M]
13	What is Normalization, Explain Second Normal form and Third Normal form with an example?	L2	CO4	[8M]
	OR			
14	Determine the closer of the following set of functional dependencies for a relation scheme. R(A,B,C,D,E,F,G,H), F={ AB→C, BD→EF, AD→G, A→H} and List the candidate keys of R.	L5	CO4	[8M]

15	Define the ACID properties of database transactions. Discuss why these properties are essential for ensuring reliable transaction processing.	L4	CO5	[8M]
	OR			
16	What are concurrent executions of transactions? How does serializability ensure consistent database state in a production environment?	L3	CO5	[8M]
17	Describe B+ tree architecture and its advantages in indexing large datasets, particularly for range queries.	L4	CO6	[8M]
	OR			
18	What is Indexing? Differentiate the types of Indexing techniques.	L3	CO6	[8M]

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