Darshan Institute of Engineering & Technology
B.Tech. | Sem-2 | Summer-2025

Course Code	: 2101CS201	**Date**	: 22-04-2025
Course Name	: Database Management System - I	**Duration**	: 150 Minutes
		Total Marks	: 70

Instructions:
1. Attempt all the questions.
2. Figures to the right indicates maximum marks.
3. Make suitable assumptions wherever necessary.

Q.1	**(A)**	Explain Database Management System and its applications.	**4**
	(B)	Discuss three levels of Database System Architecture with the help of diagram.	**3**

<div align="center">OR</div>

Clarify Data and Information with the help of example.

	(C)	Explain the different roles of DBA.	**7**

<div align="center">OR</div>

Explain the advantages of Database Management System.

Q.2	**(A)**	List and explain types of mapping cardinality.	**4**
	(B)	Define weak entity set and strong entity set.	**3**

<div align="center">OR</div>

Define entity, attributes, and relationship.

	(C)	Classify specialization and generalization.	**7**

<div align="center">OR</div>

Explain different types of attributes with example.

Q.3	**(A)**	List and explain types of Functional dependency.	**4**
	(B)	Describe decomposition with the help of example.	**3**

<div align="center">OR</div>

Describe insert anomaly and delete anomaly with the help of example.

	(C)	Explain 1NF with the help of example.	**7**

<div align="center">OR</div>

Explain 2NF with the help of example.

Q.4 **(A)** Explain query optimization. **4**

(B) Classify linear search and binary search. **3**

OR

Explain materialization and pipeline.

(C) Explain query processing with the help of diagram. **7**

OR

Explain transformation of relational expression.

Q.5 **(A)** Define transaction. Explain ACID properties of transaction. **4**

(B) Define 2 phase locking protocol. **3**

OR

Define 2 phase commit protocol.

(C) Explain log-based recovery method. **7**

OR

Explain shadow paging technique.

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