Name: **Enrolment No:**	

UPES

End Semester Examination, May 2025

Course: Database Management System **Semester: IV**

Program: B.Tech. (Electronics & Computer Engg.) **Time : 03 hrs.**

Course Code: CSEG2069 **Max. Marks: 100**

Instructions: Read the instructions carefully and attempt the questions accordingly.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	List and explain any two characteristics of DBMS that help maintain data integrity. How is this different from file-based systems?	**4**	**CO1**
Q 2	What are the various types of Functional Dependency?	**4**	**CO5**
Q 3	What is the difference between Derived Attribute and Composite Attribute? Provide examples.	**4**	**CO2**
Q 4	Describe the ACID properties of a Transaction.	**4**	**CO5**
Q 5	What is understood by primary key, candidate key and super key?	**4**	**CO3**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	What is meant by Total Participation and Partial Participation? Explain with the help of E-R Diagrams.	**10**	**CO2**
Q 7	Which two operations are combined together in a Join operation? Explain them.	**10**	**CO4**
Q 8	What are the two modes in which a data item may be locked by a transaction? Describe Rigorous 2-Phase Locking Protocol.	**10**	**CO5**
Q 9	(a) Describe Boyce–Codd Normal Form with the help of an example. OR (b) Explain the concept of partial dependency, prime attributes and non-prime attributes with the help of an example.	**10**	**CO5**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	Justify the necessity for GROUP BY and HAVING clauses in SQL with a detailed example. Explain the types of Aggregate Functions through another example.	**20**	**CO4**
Q 11	(a) Differentiate between Left Outer Join and Inner Join. Translate the following SQL queries into Relational Algebra: (i) SELECT faculty_name, subject	**20**	**CO4**

	FROM faculty WHERE lecture_hours > 40; (ii) SELECT client_name, client_transaction FROM purchases WHERE client_type = 'Premium'; OR (b)Write SQL queries for the following: (i) Create a table "Faculty" with columns: FID, Name, Department, Salary. (ii) Insert two records. (iii) Update salary of a faculty with FID = 102. (iv) Display all records in descending order of salary. (v) Delete a record where salary < 40000.		