QP Code: S253A034 | Reg. No | | | | | | | | | | | AY 23

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Third Semester – Regular & Supplementary) Examinations, November 2025

23BCSPC23001/23BCMPC23001/23BCDPC23001-Database Management Systems

(CSE, CSE(AIML), CSE(DS))

Time: 3 hrs | Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. List the difference between relational schema and relational instances.	CO1	K1
b. What do you mean by Specialization and Generalization?	CO2	K2
c. What is BCNF, explain in concise manner.	CO3	K1
d. Define commit and rollback.	CO4	K2
e. What is called mirroring?	CO5	K2

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions	Marks	CO #	Blooms Level
2. a. Explain ER Model briefly by defining Entity, different types of attributes and possible relationships among them.	5	CO1	K1
b. Discuss the main characteristics of the database approach and how does it differ from traditional file system.	5	CO1	K2
(OR)			
c. Design the Three Tier Architecture of database system concepts and explain each phase in brief.	5	CO1	K3
d. Explain the different types of database users and their roles in a DBMS environment.	5	CO1	K2
3.a. Design an ER Model by identifying entities, relationships, attributes for a GROCERY MART Database System.	5	CO2	K3
b. Explain unary operations of relational algebra with examples for : select, project, rename.	5	CO2	K3
(OR)			
c. Design an ER Model by identifying entities, relationships, attributes for a LIBRARY Database System.	5	CO2	K3
d. Explain tuple relational calculus and domain relational calculus with examples.	5	CO2	K2
4.a. Explain about Normalization with with its advantages? Explain when transitive dependency is verified and what are the procedure to handle it.	5	CO3	K3
b. Explain briefly on: Full functional dependency and partial functional dependency.	5	CO3	K2
(OR)			
c. Explain the steps to convert an unnormalized relation into 1NF, 2NF, and 3NF. Use a suitable example.	5	CO3	K3
d. Suppose given two relations:Customers and Borrowers.	5	CO2	K3

	Customers(CustID, Name, Address) Borrowers(LoanID, CID) Compare Cartesian product and Join operation both by applying on the above relations.			
5.a.	Explain the ACID properties of transactions.	5	CO4	K2
b.	Explain 2 phase locking protocol. How 2 phase locking protocol ensures serializability.	5	CO4	K2
	(OR)			
c.	Explain the different states of a transaction with a neat diagram.	5	CO4	K3
d.	What is a deadlock? List methods to handle deadlocks.	5	CO4	K2
6.a.	What are the different external storage devices available. Explain the working process of a Hard disk Drive.	5	CO5	K3
b.	Briefly elaborate the Mapping Cardinalities and their types with suitable examples.	5	CO2	K3
	(OR)			
c.	Elaborate how magnetic disks works and represent their structures.	5	CO5	K1
d.	Discuss the basic terminologies of the relational model such as relation, tuple, attribute, and domain. Differentiate between specialization and generalization.	5	CO2	K1

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