QP Code: R264A035 | Reg. No | | | | | | | | | | | AY 23

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

B. Tech (Fourth Semester - Regular) Examinations, April 2026

23BCSES24001 – Database Management Systems

(CIVIL, EE, EEE, ECE)

Time: 3 hrs | Maximum: 60 Marks

Answer ALL questions

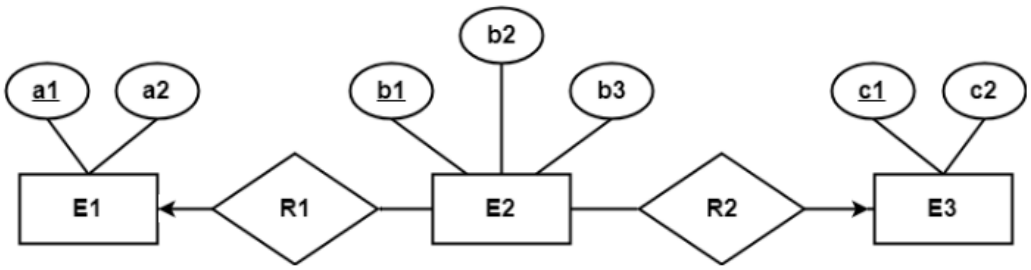
(The figures in the right-hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. Explain the terms: 1) Physical data independence, 2) Logical data independence	CO1	K1
b. Write an example on each selection and projection operation of relational algebra?	CO2	K2
c. Differentiate between Partial and Transitive Functional dependency	CO2	K2
d. Draw a neat Transaction State diagram.	CO4	K3
e. Define indexing	CO3	K1

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions	Marks	CO #	Blooms Level
2. a. Describe in detail about two-tier and three-tier client-server architectures	5	CO1	K2
b. Explain database constraints in with suitable examples.	5	CO1	K2
OR			
c. Difference between file system and DBMS	5	CO1	K2
d. What is the work of DBA? Explain	5	CO1	K1
3.a. Draw an ER diagram by identifying entities, attributes, relationships for Hospital management system.	5	CO2	K3
b. Explain Keys in DBMS with proper example.	5	CO2	K2
OR			
c. Define candidate key and super keys. Find the Prime and Non-Prime attribute in following R(A,B,C,D,E) FD:{A->B, B->E, C->D}	5	CO2	K3
d. Find the minimum number of tables required to represent the given ER diagram in relational model.			



	5	CO2	K2

4.a. Consider the following Sailors-Boats-Reserves schema. **Sailors (sid, sname, rating, age)** **Boats (bid, bname, color)** **Reserves (sid, bid, date)**	5	CO3	K2
i. Find name of sailors who have reserved boat number 101.			

	ii. Find the names of sailors who have reserved red boat.			
	iii. Find color of the boat reserved by Dustin			
b.	Explain how Armstrong's Axioms can be used to find the closure of a set of attributes.	5	CO3	K3
	OR			
c.	Draw transaction state diagram and describe each state that a transaction goes through during its execution	5	CO4	K2
d.	Define concurrency control with lock based protocol	5	CO4	K2
5.a.	Consider a relation schema R(A, B, C, D, E) with a set of FDs F = {A → B , BC →E, ED → A } 1 List all keys of R 2 Is R in 3NF 3 Is R in BCNF	6	CO2	K3
b.	Explain the properties of Transaction.	4	CO4	K2
	OR			
c.	Write down short notes (any two) i) Data Independence ii) 3-tier architecture iii) End Userd	5	CO1	K1
d.	What is data abstraction? Describe briefly Data independence with neat diagram.	5	CO1	K2
6.a.	Differentiate between primary storage and secondary storage in the context of DBMS.	5	CO5	K4
b.	Compare and contrast 2NF and 3NF.	5	CO5	K4
	OR			
c.	Define RAID and explain its purpose in database systems.	5	CO3	K2
d.	Write short notes on the following (i)Transaction Control Statements (TCS) (ii)Data Manipulation Language (DML)	5	CO3	K2

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