GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR
(GIET UNIVERSITY)

B. Tech (Fourth Semester - Regular) Examinations, April – 2025

23BCSES24001 – Database Management Systems

(BIOTECH, CHEM, CIVIL, EE, EEE, ECE, MECH)

Time: 3 hrs Maximum: 60 Marks

Answer ALL questions

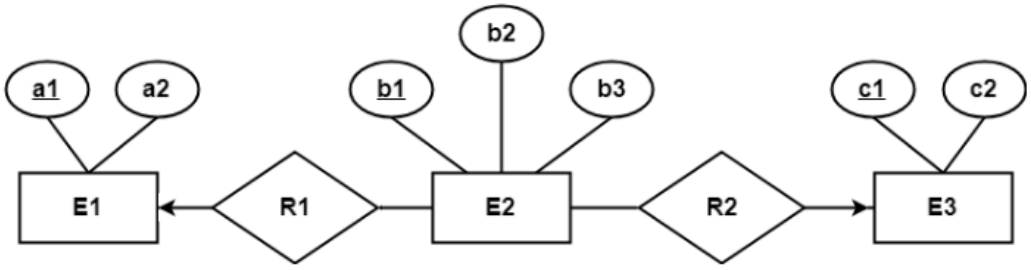
(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. Narrate the disadvantages of File Processing System.	CO1	K2
b. Describe functional dependency and its significance in normalization.	CO3	K3
c. How do projection and selection differ in relational algebra?	CO2	K2
d. Can you describe the properties of acid?	CO4	K2
e. Define RAID and its importance in data storage.	CO5	K1

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions	Marks	CO #	Blooms Level
2. a. Discuss the various disadvantages of file system and explain how it can be overcome in DBMS	5	CO1	K1
b. What is ER Modelling? Draw an ER Diagram for University Registration System	5	CO2	K3
(OR)			
c. Explain the ACID properties of transactions. Provide an example scenario to demonstrate their significance in ensuring data consistency.	5	CO4	K2
d. Differentiate between selection and projection in relational algebra.	5	CO2	K3
3.a. Find the minimum number of tables required to represent the given ER diagram in relational model.			



	5	CO1	K3
b. What is Database recovery system and explain the types of database recovery.	5	CO5	K2
(OR)			
c. Consider the following Sailors-Boats-Reserves schema. **Sailors (sid, sname, rating, age)** **Boats (bid, bname, color)** **Reserves (sid, bid, date)** 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	5	CO2	K4

d.	Discuss the main characteristics of the database approach and how does it differ from traditional file system	5	CO1	K2
4.a.	Consider the relation R(A, B, C, D) with the functional dependencies (FD): {AB→CD, D→B, C→A} Find the candidate keys, Prime attributes & Non-prime attributes.	5	CO3	K3
b.	List and explain the different types of users in a DBMS.	5	CO1	K2
	(OR)			
c.	Explain in detail the advantages of database management systems	5	CO1	K2
d.	Explain how Armstrong's Axioms can be used to find the closure of a set of attributes.	5	CO3	K2
5.a.	What you mean as mapping cardinalities and explain?	5	CO1	K2
b.	Explain the purpose of RAID in database systems.	5	CO5	K2
	(OR)			
c.	Consider the relation R (A, B, C, D) with functional dependencies: {AB → C, C → D, D → B}. Is the relation in BCNF?	5	CO4	K3
d.	Write short notes on the following i. Transaction Control Statements (TCS) ii. Data Manipulation Language (DML)	5	CO2	K2
6.a.	Differentiate between primary storage and secondary storage in the context of DBMS.	5	CO5	K2
b.	Explain the different types of join operations in relational algebra.	5	CO2	K2
	(OR)			
c.	Compare and contrast 2NF and 3NF.	5	CO4	K2
d.	Define Data independence. Compare between physical and logical data independence	5	CO1	K2

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