QP Code: R264A033 | 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 System

(Biotech)

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)**

		CO #	Blooms Level
Q.1.	Answer ***ALL*** questions		
a.	Define Determinant and Dependant in functional Dependency	CO2	K2
b.	Define mapping in DBMS.	CO1	K1
c.	Explain Hash file organization.	CO3	K1
d.	Write the condition of BCNF.	CO2	K2
e.	What are two pitfalls (problems) of lock-based protocols?	CO4	K2

PART – B **(10 x 5 = 50 Marks)**

		Marks	CO #	Blooms Level
	Answer ***ALL*** the questions			
2. a.	Explain 3 tier- architecture with block- diagram.	5	CO1	K2
b.	Explain about Data abstraction with its levels.	5	CO1	K2
	(OR)			
c.	Give the following queries in the relational algebra using the relational schema student(id, name) enrolledIn(id, code) subject(code, lecturer) i. What are the names of students in both cs1500 and cs1200? ii. What are the names of all the students in cs1500? Who teaches cs1500 or cs3020?	5	CO2	KL3
d.	What you mean as mapping cardinalities and explain?	5	CO2	K2
3.a.	Define following a) Functional dependency. b) Partial dependency c) Join dependency	5	CO2	K1
b.	How Relational Calculus is different from Relational Algebra?	5	CO2	K4
	(OR)			
c.	Write down all commands of DDL with examples.	5	CO2	K2
d.	Consider two set of FD's F and G and find out whether they are equivalent or not? **F:{A→C,AC→D,E→AD,E→H} & G:{A→CD,E→AH}**	5	CO2	K3
4.a.	Discuss about network and object oriented data models.	5	CO3	K2
b.	Describe static hashing and dynamic hashing	5	CO3	K2
	(OR)			
c.	Explain the Properties of transactions? How can you implement atomicity in transactions? Explain.	6	CO4	K2
d.	Explain in detail about Lock based protocols and Timestamp based protocols.	4	CO4	K2
5.a.	Explain about various file operation performed on DBMS.	5	CO5	K2
b.	Explain the following a)database failure b)database recovery.	5	CO5	K2
	(OR)			

c.	Draw an ER-Diagram for hospital Database and write the steps to convert into relational model.	7	CO2	K3
d.	How to list and update row in a table? Explain with syntax and examples.	3	CO2	K3
6.a.	What are Armstrong's axioms and why it's required? Use Armstrong axioms to prove the soundness of decomposition rule and pseudo transitive rule.	5	CO2	K4
b.	Consider the universal relation R = {A, B, C, D, E, F, G, H, I} and the set of Functional dependencies F = { {A, B} -> {C}, {A} -> {D, E}, {B} -> {F}, {F} -> {G, H}, {D} -> {I, J} }. What is the key for R? Decompose R into 2NF, then 3NF relations.	5	CO2	K4
	(OR)			
c.	Define Storage structure in DBMS. Explain the different types of indexing and their principles.	5	CO3	K2
d.	Describe briefly what is normalization? Why it is required?	5	CO2	K2

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