

**Instructions:**

1. All questions are compulsory.
2. Each sub-question is of 5 marks.

**Max Marks:75****Duration:2 ½ hours**

Q.1		Attempt any <b>THREE</b> of the following:	[15]
	(a)	State and explain the 12 Codd's rule for relational database	
	(b)	Define business rules and its characteristics	
	(c)	With diagrammatic representation explain database architecture	
	(d)	Write a note on transaction management systems	
	(e)	List the various ER diagram notations. What is Unified Modelling Language and state its advantages and disadvantages of UML Diagrams	
	(f)	Explain the concept of mapping cardinalities in detail	
Q.2		Attempt any <b>THREE</b> of the following:	[15]
	(a)	Explain the concept of Relational Calculus.	
	(b)	Write a short note on BCNF	
	(c)	Explain set operators with example.	
	(d)	Write a short on tuple Relational Calculus	
	(e)	State the difference between Calculus vs Relational Algebra	
	(f)	Explain the aggregate operation of relational algebra	
Q.3		Attempt any <b>THREE</b> of the following:	[15]
	(a)	Outline SQL DML Commands.	
	(b)	What is view? And how to create a view.	
	(c)	Enumerate SQL database modification.	
	(d)	What are Constraints? Explain types of Constraints.	
	(e)	Differentiate between table and view	
	(f)	Explain Check and Not Null constraints with example	
Q.4		Attempt any <b>THREE</b> of the following:	[15]
	(a)	What is Deadlock? Explain Deadlock recovery detail.	
	(b)	Explain Optimistic concurrency control (OCC) in detail	
	(c)	Describe Database recovery management.	
	(d)	Explain ACID properties of transaction.	
	(e)	Show that two phase locking protocol ensures conflict serializability	
	(f)	Write a note on Time stamping methods.	
Q.5		Attempt any <b>THREE</b> of the following:	[15]
	(a)	Write a PL/SQL block to check whether the number is even or odd.	
	(b)	Define PL/SQL and Explain its structure.	
	(c)	Write a brief note on Exception Handling in PL/SQL.	
	(d)	What are hierarchical queries? Explain the syntax of hierarchical queries.	
	(e)	Differentiate Procedures and Functions.	

	(f)	What are triggers? What are the different types of triggers? How are they created? Give the syntax and examples of the same.	
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