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First Semester MCA Degree Examination, Dec.2024/Jan.2025

Database Management Systems (DBMS)

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M : Marks , L: Bloom's level , C: Course outcomes.

Module – 1			M	L	C
Q.1	a.	Define the following terms: i. DBMS ii. Entity & Attribute iii. Relational data model iv. Schema and Schema Diagram v. Primary key and Foreign key	10	L1	CO1
	b.	Discuss the different applications of DBMS.	5	L2	CO1
	c.	Explain three schema architecture with neat diagram.	5	L2	CO1
OR					
Q.2	a.	Explain components of DBMS.	10	L2	CO1
	b.	Discuss the different types of Relationship types.	5	L2	CO1
	c.	Draw ER-Diagram for Company database which contains entity type Employee, Department, Project and Dependent.	5	L3	CO1
Module – 2					
Q.3	a.	Explain the following relational algebra operations i. Selection ii. Projection	10	L2	CO2
	b.	Describe the following DDL and DML commands. i. Create ii. Insert iii. Delete iv. Update v. Drop	10	L2	CO2
OR					
Q.4	a.	Explain the following clauses i. select ...From... Where clause ii. Group by and Having clause	10	L2	CO3
	b.	Elaborate the importance of views.	5	L2	CO3
	c.	Discuss about Procedures.	5	L2	CO3
Module – 3					
Q.5	a.	Explain 1NF and 2NF with an example.	10	L2	CO3
	b.	Discuss 3NF and Boyce codd with an example.	10	L2	CO3
OR					
Q.6	a.	Explain 4NF and 5NF with an example.	10	L2	CO3
	b.	Discuss the following with an Example. i. Functional dependency ii. Dependency Preservation Property	10	L2	CO3
Module – 4					
Q.7	a.	Describe the following i. ACID Properties of transaction ii. Different states for transaction execution	10	L2	CO2
	b.	Discuss two-phase locking system with an example.	10	L2	CO2
OR					
Q.8	a.	Explain the implementation of Isolation level.	10	L2	CO2
	b.	Discuss Multiple Granularity with an example.	10	L2	CO2
Module – 5					
Q.9	a.	How the log can be used to recover from a system crash and to roll back transactions during normal operation?	10	L1	CO2
	b.	Illustrate Checkpoints and Fuzzy Check pointing with an example.	10	L3	CO2
OR					
1 of 2					

Q.10	a.	Describe the Buffer Management with an example.	10	L2	CO2			
	b.	<p>Define Undo and Redo options. The log states are mentioned below. Determine the use of Undo and Redo options to ensure the atomicity in below mentioned examples.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top;"> <p><T₀ start> < T₀ , A, 1000, 950> < T₀ , B, 2000, 2050></p> <p style="text-align: center;">(i)</p> </td> <td style="width: 33%; vertical-align: top;"> <p><T₀ start> < T₀ , A, 1000, 950> < T₀ , B, 2000, 2050> <T₀ commit> <T₁ start> < T₁ , C, 700, 600></p> <p style="text-align: center;">(ii)</p> </td> <td style="width: 33%; vertical-align: top;"> <p><T₀ start> < T₀ , A, 1000, 950> < T₀ , B, 2000, 2050> <T₀ commit> <T₁ start> < T₁ , C, 700, 600> <T₁ commit></p> <p style="text-align: center;">(iii)</p> </td> </tr> </table>	<p><T₀ start> < T₀ , A, 1000, 950> < T₀ , B, 2000, 2050></p> <p style="text-align: center;">(i)</p>	<p><T₀ start> < T₀ , A, 1000, 950> < T₀ , B, 2000, 2050> <T₀ commit> <T₁ start> < T₁ , C, 700, 600></p> <p style="text-align: center;">(ii)</p>	<p><T₀ start> < T₀ , A, 1000, 950> < T₀ , B, 2000, 2050> <T₀ commit> <T₁ start> < T₁ , C, 700, 600> <T₁ commit></p> <p style="text-align: center;">(iii)</p>	10	L3	CO2
<p><T₀ start> < T₀ , A, 1000, 950> < T₀ , B, 2000, 2050></p> <p style="text-align: center;">(i)</p>	<p><T₀ start> < T₀ , A, 1000, 950> < T₀ , B, 2000, 2050> <T₀ commit> <T₁ start> < T₁ , C, 700, 600></p> <p style="text-align: center;">(ii)</p>	<p><T₀ start> < T₀ , A, 1000, 950> < T₀ , B, 2000, 2050> <T₀ commit> <T₁ start> < T₁ , C, 700, 600> <T₁ commit></p> <p style="text-align: center;">(iii)</p>						
