PVP 20

Code: 20CS3502

III B.Tech - I Semester – Regular / Supplementary Examinations
NOVEMBER 2024

DATABASE MANAGEMENT SYSTEMS
(COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.
BL – Blooms Level CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Discuss the key characteristics that differentiate the database approach from traditional file processing systems.	L2	CO1	7 M
	b)	Explain the components of a database system environment and their functions.	L2	CO1	7 M
OR					
2	a)	Explain the importance of conceptual, logical and physical schemas in database design.	L2	CO1	7 M
	b)	Compare and contrast centralized and client-server architectures for DBMS, highlighting their advantages and disadvantages.	L2	CO1	7 M

		UNIT-II			
3	a)	Discuss the role of attributes in defining entity types. How do keys (primary, candidate, and foreign keys) contribute to the integrity and functionality of a database? Provide examples to illustrate your points with proper justification.	L4	CO1 CO4	10 M
	b)	What are some common design issues that arise when creating ER diagrams and how can they be mitigated?	L2	CO1 CO4	4 M
		OR			
4		Analyze the different types of relationships that can exist between entity sets. How do roles and structural constraints like cardinality and participation influence the design and implementation of these relationships in a database? Explain.	L4	CO1 CO4	14 M
		UNIT-III			
5	a)	Explain how constraints can be specified as assertions in SQL.	L2	CO1 CO2 CO4	4 M
	b)	Analyze the use of INSERT, DELETE and UPDATE statements in SQL. How do these commands interact with relational model constraints and what precautions must be taken to maintain data integrity?	L4	CO1 CO2 CO4	10 M
		OR			

6	a)	Explore the set theory operations in relational algebra, such as union, intersection and difference. Provide examples of how these operations can be used to perform complex queries in a relational database.	L3	CO1 CO2 CO4	10 M
	b)	How do views contribute to data abstraction and security in a relational database?	L2	CO1 CO2 CO4	4 M
		UNIT-IV			
7		Define multi-valued dependencies and explain how they relate to Fourth Normal Form (4NF). Provide examples of how multi-valued dependencies can lead to redundancy in a database and how 4NF addresses this issue.	L3	CO1 CO3 CO4	14 M
		OR			
8		Explain the criteria for a database schema to be in Second Normal Form (2NF) and Third Normal Form (3NF). What are the advantages of having a database in 2NF and 3NF and what types of anomalies do these normal forms prevent?	L2	CO1 CO3 CO4	14 M
		UNIT-V			
9	a)	Explain how does transaction processing ensure consistency, reliability and integrity in a multi-user environment.	L2	CO1	7 M

	b)	Explain how the Two-Phase Locking protocol guarantees serializability in a database system.	L2	CO1	7 M
OR					
10	a)	Explore the use of SQL commands such as BEGIN TRANSACTION, COMMIT and ROLLBACK and how they interact with the ACID properties of transactions.	L2	CO1	9 M
	b)	Discuss the No UNDO/REDO recovery method based on deferred updates.	L2	CO1	5 M