PVP 20

Code: 20AM3402, 20DS3402

II B.Tech - II Semester – Regular Examinations
MAY - 2024

DATABASE MANAGEMENT SYSTEMS
(Common for AIML, DS)

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)	Compare and contrast centralized and client-server architectures in the context of Database Management Systems.	L2	CO1	7 M
	b)	Discuss the role of data independence and how it is achieved in the database approach.	L2	CO1	7 M
OR					
2	a)	Define the components of a database system environment, including hardware, software, data, procedures, and users. Discuss the interdependence of these components and their roles in ensuring the proper functioning of a database system.	L2	CO1	7 M
	b)	Evaluate the importance of query languages and their impact on database usability.	L2	CO1	7 M

UNIT-II					
3	a)	Define and differentiate between entity types and entity sets in the context of the Entity-Relationship Model. Discuss the role of attributes and keys in defining the characteristics and uniqueness of entities within a database.	L3	CO2	7 M
	b)	Explore the use of roles and structural constraints in refining relationships and ensuring accurate data representation.	L3	CO2	7 M
OR					
4	a)	Discuss the steps involved in transforming entity types, relationship types, and attributes into tables, keys, and constraints.	L3	CO2	7 M
	b)	Analyze the importance of feedback and revisions in the design refinement process.	L3	CO2	7 M
UNIT-III					
5	a)	Explore relational algebra operations inspired by set theory, such as UNION, INTERSECT, and DIFFERENCE. Discuss how these operations can be used to combine and compare relations.	L3	CO2	7 M
	b)	Define the key concepts of the relational model, including relations, attributes and tuples. Discuss the significance of primary keys and foreign keys in maintaining data integrity within a relational database.	L3	CO2	7 M
OR					

6	a)	Provide examples of how constraints can be specified during the creation of tables in SQL. Discuss the importance of constraints in enforcing data integrity and ensuring consistency in a relational database.	L3	CO2	7 M
	b)	Define and explain the concept of views in SQL. Discuss the advantages of using views and provide examples of scenarios where views can enhance data accessibility and security.	L3	CO2	7 M
UNIT-IV					
7	a)	Define Fifth Normal Form (5NF) and discuss how it deals with join dependencies.	L3	CO3	7 M
	b)	Discuss the challenges and benefits associated with implementing normalization.	L3	CO3	7 M
OR					
8	a)	Consider the Universal Relation A(P, Q, R, S, T) and the set of functional dependencies. P→QR RS→T Q→S T→P i) List the candidate keys ii) Is it in the 2 NF? iii) Is it in 3 NF?	L3	CO3	7 M
	b)	Define Boyce-Codd Normal Form (BCNF) and explain the conditions that must be satisfied for a relation to be in BCNF.	L3	CO3	7 M

UNIT-V					
9	a)	Discuss the criteria for characterizing schedules based on their recoverability and serializability properties.	L2	CO1	7 M
	b)	Explain the shadow paging technique for recovery. Discuss the steps involved in implementing shadow paging and its advantages in terms of simplicity and efficiency.	L2	CO1	7 M
OR					
10	a)	Explain the principles of the Two-Phase Locking (2PL) protocol. Discuss the types of locks used in 2PL and their role in preventing conflicts among concurrent transactions.	L2	CO1	7 M
	b)	Elaborate on the concept of a transaction and its characteristics. Discuss how transactions interact with the larger system and the implications for data integrity.	L2	CO1	7 M