

Roll No.

--	--	--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (CSE) (Sem.–5)
DATABASE MANAGEMENT SYSTEMS

Subject Code : BTCS501-18

M.Code : 78320

Date of Examination : 26-11-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a. What is data abstraction in database systems?
- b. What is data abstraction in database systems?
- c. Define domain relational calculus and its use in querying.
- d. What are B-trees, and why are they useful in databases?
- e. What is the primary advantage of using indices in a database?
- f. Define Query Optimization.
- g. Define serializability in transaction scheduling.
- h. What is authentication in database security?
- i. What is SQL injection, and how can it be prevented?
- j. What is log base recovery?

SECTION-B

2. Compare the entity-relationship, network, relational, and object-oriented data models discussing their main characteristics.
3. Explain the process of query optimization in a relational database, detailing the importance of query equivalence and join strategies.
4. Describe the structure and function of B-trees in database storage, including scenarios where they are most useful.
5. Explain locking-based and timestamp-based schedulers, comparing their approaches to ensuring data consistency.
6. Explain the differences between object-oriented databases and object-relational databases and discuss the advantages of each.

SECTION-C

7. Discuss the architecture of a database system, including data abstraction levels, data independence, and the roles of DDL and DML. Provide examples to illustrate each concept.
8. Explain the DAC, MAC, and RBAC access control models in detail, discussing their strengths and weaknesses and the scenarios where each model is most effective.
9. **Write a short note on :**
 - a. ACID Properties
 - b. Role of IDS in database security.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.