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Roll No. : .....

**B022413(022)**

**B.Tech. (Fourth Semester) Examination**

**April-May 2022**

**(AICTE Scheme)**

**(CSE Branch)**

**DATABASE MANAGEMENT SYSTEM**

***Time Allowed : Three hours***

***Maximum Marks : 100***

***Minimum Pass Marks : 35***

***Note : Attempt all questions. Part (a) is compulsory from each unit. Attempt any two parts from (b), (c) and (d) in each unit. All units carries equal marks.***

**Unit-I**

1. (a) Define data independence.

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- (b) Explain Procedural and Non procedural DML in detail. 8
- (c) Enumerate the different types of data models existing for structured data storage. 8
- (d) Explain terminology used in entity relationship model with suitable example. 8

### Unit-II

2. (a) Define Relation. 4
- (b) Define Relational algebra. What are the operation in relational algebra? 8
- (c) Describe tuple – relational calculus and domain relational calculus with various example. 8
- (d) Explain BCNF (Boyce Codd Normal Form) with example. 8

### Unit-III

3. (a) Define Query equivalence. 4
- (b) Explain basic steps of query processing with neat diagram. 8

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- (c) Explain query optimization. Explain the structure of query optimizer. 8
- (d) Write short notes on : 8
- (i) Indices
- (ii) Hashing

### Unit-IV

4. (a) What is Time Stamp? 4
- (b) What is Transaction? List the properties of transaction. 8
- (c) What do you understand by Serializability? Explain the concept of conflict serializability and view serializability with examples. 8
- (d) Explain concurrency control mechanism. 8

### Unit-V

5. (a) Define Authentication. 4
- (b) Describe MAC and RBAC models in detail. 8

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(c) Explain data warehousing with suitable diagram. 8

(d) Write short notes on : 8

(i) Distributed databases

(ii) Web databases