

**UNIT – I**

2. (a) Explain various operations used for data manipulation in detail. 7.5  
(b) Differentiate between DDL and DML in detail. 7.5
3. Write short notes on : 15  
(a) E-R Model  
(b) Integrity constraints

**UNIT – II**

4. (a) What do you understand by Relational Algebra ?  
Explain the various operations applied on Relational Algebra. 7.5  
(b) Explain various types of query optimization algorithms in detail. 7.5
5. Write short notes on : 15  
(a) Query Equivalence  
(b) DB2

**UNIT – III**

6. Explain concurrency control and ACID property in detail. 15
7. Write short notes on : 15  
(a) Indices  
(b) Serializability of Scheduling

3030- (P-3)(Q-9)(23) ( 2 )

**UNIT – IV**

8. Differentiate between various models of database security in detail with examples. 15
9. Write short notes on : 15  
(a) Data warehousing and data mining  
(b) Distributed databases

3030- (P-3)(Q-9)(23) ( 3 )

Roll No. ....

**3030**

**B. Tech. 4th Semester (CSE-Data Science)  
Examination – May, 2023**

**DATABASE MANAGEMENT SYSTEMS**

Paper : PCC-CSE-201-G

*Time : Three hours ]*

*[ Maximum Marks : 75*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

*Note : Attempt any five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.*

1. (a) Discuss B-Trees in detail.
- (b) What do you understand by Relational algebra ? Explain with suitable example.
- (c) Define Intrusion Detection.
- (d) Explain Transaction processing in detail.
- (e) Discuss web databases with example.
- (f) What is database security ?

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P. T. O.