# Th.4-DATABASE MANAGEMENT SYSTEM

COMMON TO (CSE/IT)

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|---|---|---|---|
| **Theory** | **4 Periods per week** | **Internal Assessment** | **20 Marks** |
| **Total Periods** | **60 Periods** | **End Sem Exam** | **80 Marks** |
| **Examination** | **3hours** | **Total Marks** | **100Marks** |

**A. Topic wise distribution of periods**

| Sl. No. | Topics | Periods |
|---|---|---|
| 1 | BASIC CONCPETS OF DBMS | 05 |
| 2 | DATA MODELS | 08 |
| 3 | RELATIONAL DATABASE | 06 |
| 4 | NORMALIZATION IN RELATIONAL SYSTEM | 08 |
| 5 | STRUCTURED QUERY LANGUAGE | 09 |
| 6 | TRANSACTION PROCESSING CONCEPTS | 08 |
| 7 | CONCURRENCY CONTROL CONCEPTS | 08 |
| 8 | SECURITY AND INTEGRITY | 08 |
| | **TOTAL** | **60** |

**B. RATIONALE:** Databases are wonderful learning tools because they embody so much of the learning process. It is the vital component of modern information system which needs to store and process large volume of data. It gives an idea about accessing of data and shared by different application programs. The architecture of the database is simple to understand.

**C. OBJECTIVE:** After completion of this course the student will be able to**:**

- Understand the database concepts, their benefits and advantages
- Understand the Database architecture
- Understand the concepts of E-R diagrams & E-R modeling
- Understand relational algebra
- Comprehend the different aspects of SQL
- Understand the concepts of normalization
- Understand the concepts of transaction processing
- Understand the techniques of concurrency control
- Comprehend the concepts & techniques of backup & recovery of database.
- Understand how to maintain security and integrity in database.

## D.COURSE CONTENTS:

### 1.0 BASIC CONCPETS OF DBMS

1.1 Purpose of database Systems
1.2 Explain Data abstraction
1.3 Database users
1.4 Data definition language
1.5 Data Dictionary

### 2.0 DATA MODELS

2.1 Data independence
2.2 Entity relationship models
2.3 Entity sets and Relationship sets 2.4 Explain Attributes
2.5 Mapping constraints

2.6 E-R Diagram
2.7 Relational model
2.8 Hierarchical model
2.9 Network model

**3.0 RELATIONAL DATABASE**

3.1 Relational algebra
3.2 Different operators select, project, join , simple Examples

**4.0 NORMALIZATION IN RELATIONAL SYSTEM**

4.1 Functional Dependencies
4.2 Lossless join
4.3 Importance of normalization
4.4 Compare First second and third normal forms 4.5 Explain BCNF

**5.0 STRUCTURED QUERY LANGUAGE**

5.1 Elementary idea of Query language
5.2 Queries in SQL
5.3 Simple queries to create, update, insert in SQL

**6.0 TRANSACTION PROCESSING CONCEPTS**

6.1 Idea about transaction processing
6.2 Transaction & system concept
6.3 Desirable properties of transaction
6.4 Schedules and recoverability

**7.0 CONCURRENCY CONTROL CONCEPTS**
7.1 Basic concepts,
7.2 Locks, Live Lock, Dead Lock,
7.3 Serializability (only fundamentals)

**8.0 SECURITY AND INTEGRITY**

8.1 Authorization and views
8.2 Security constraints
8.3 Integrity Constraints 8.4 Discuss Encryption

**Coverage of Syllabus upto Internal Exams (I.A.)**
**Chapter 1,2,3,4**

**Books Recommended:-**

| Sl.No | Name of Authors | Title of the Book | Name of the publisher |
|---|---|---|---|
| 01 | Rog,Cornel | Database System Concepts | Cengage Learning |
| 02 | Prateek Bhatia | Data Base System | Kalyani Publications |
| 03 | A. Silberschatz, H.F. Korth | Database System Concepts | TMH Publication |
| 04 | C.J. Date | An Introduction to Database Systems | Norosa Publication |