

**BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)**  
**B. Tech. Sem - IV Computer Science & Business Systems : SUMMER : 2025**  
**SUBJECT: DATABASE MANAGEMENT SYSTEMS**

Day : Tuesday  
Date : 27/05/2025

S-24155-2025

Time : 10:00 AM-01:00 PM  
Max. Marks : 60

**N.B.**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Assume suitable data **WHEREVER** necessary.
- 4) Draw neat labeled diagrams **WHEREVER** necessary.

- Q.1** What is Database Management System? How is it different from File Management System? (10)
- OR**
- Q.1** Explain following Database Models: (10)
- i. Hierarchical Database Model.
  - ii. Network Database Model.
  - iii. E-R Database Model.
  - iv. Relational Database Model.
  - v. Object Oriented Database Model.
- Q.2** What is Relational Algebra? Explain different join operations in Relational Algebra with suitable example. (10)
- OR**
- Q.2** Write a detailed note on following Open-Source databases: (10)
- i. MYSQL.
  - ii. ORACLE.
  - iii. IBM DB2.
- Q.3** What are Armstrong's Axioms used for and why are they called sound and complete. Use an example to justify your answer. (10)
- OR**
- Q.3** What is the significance of Functional Dependency? Explain following types of Functional Dependencies with suitable example: (10)
- i. Trivial Functional Dependency.
  - ii. Non-Trivial Functional Dependency.
  - iii. Partial Functional Dependency.
  - iv. Full Functional Dependency.
- Q.4** What is Query Optimization? Explain with suitable example how Equivalence Rules are used to optimize query. (10)
- OR**
- Q.4** Draw block diagram of Query Processing. Explain the process of Query Processing in detail. (10)
- Q.5** Explain with example how Time-Stamp based Protocols work. (10)
- OR**
- Q.5** Discuss what a Transaction is with the help of suitable example showing ACID properties of a Transaction. (10)
- Q.6** Write a detailed note on: Data Warehousing and Data Mining. (10)
- OR**
- Q.6** Write a detailed note on: Logical Databases and Web Databases. (10)

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