

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)
