

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

Day : Wednesday  
Date : 04/06/2025

**S-25585-2025**

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) Use of non-programmable calculator is **allowed**.
- 4) Assume suitable data **WHEREVER** necessary.
- 5) Draw neat diagram **WHEREVER** necessary.

- Q.1 What is database system? Explain ER model. (10)  
OR
- Q.1 Discuss Entities, attributes, relationship and constraints in detail. (10)
- Q.2 Explain relation algebra operators and relation calculus with example. (10)  
OR
- Q.2 Define relation model and integrity constraints over relation. Explain with example. (10)
- Q.3 Define normal forms? Explain 1NF, 2NF and 3NF in detail. (10)  
OR
- Q.3 Discuss schema refinement in database design. Explain in detail. (10)
- Q.4 Explain two aggregate functions of SQL with suitable example. (10)  
OR
- Q.4 Explain primary key, foreign key in detail with example. (10)
- Q.5 List and explain various issues while transactions are running concurrently in DBMS. (10)  
OR
- Q.5 Explain stamp based and validation based protocol in detail. (10)
- Q.6 What is multimedia database? Explain in detail. (10)  
OR
- Q.6 Define massive datasets and hadoop. Explain in detail. (10)

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