

DBMS – ASSIGNMENT 2

M.Tech. (CS), First Year, 2025–2026

Deadline: February 15, 2026

Total: 5 marks

SUBMISSION INSTRUCTIONS

1. Submit all the solutions in a single file.
2. Naming convention for your submission file (assuming CS25xx is your roll number): CS25xx-assign2 (.rtf, .docx, .doc, .pdf, .tex, etc.).
3. To submit a solution file (say CS25xx-assign2.pdf), ensure that it is not password protected and mail to <assignisik@gmail.com> with the subject line as follows: DBMS M.Tech. (CS) 2025-27 CS25xx Assignment 2.

NOTE: All the solutions must be self-sufficient and to the point.

Q1. Prove or disprove the following statements:

- (a) Every relational schema has a dependency-preserving, lossless decomposition into Third Normal Form (3NF).
- (b) Every relational schema has a dependency-preserving, lossless decomposition into Boyce-Codd Normal Form (BCNF).

Q2. Consider a relation R having all the attributes as atomic and a pair of multi-attribute candidate keys, say $K1$ and $K2$. Suppose $K1$ and $K2$ share a common attribute. What is the highest normal form that R might satisfy?