



Department of Artificial Intelligence & Machine Learning

Acharya Institute of Technology

Acharya Dr. Sarvepalli Radhakrishnan Road, Acharya P.O., Soladevanahalli, Bangalore-560107, INDIA

www.acharya.ac.in, Email: hod-aiml@acharya.ac.in

MODULE ASSESSMENT TEST - 3 [Academic Year: 2024-25]

Sub with Code: DBMS- BCS403

Semester/Section: 4 A

Max Marks: 20

Duration: 1Hr

Note: Answer any 2 of the following questions.(10 Marks Each) **Date:** 27-03-2025

Q. No.	Question	CO	BL
1	What is Normalization? Explain the different normal forms up to BCNF with suitable examples.	3	L2
2	<p>Define Functional Dependency. Given a relation $R(A, B, C, D, E)$ and the following functional dependencies:</p> <ul style="list-style-type: none"> $A \rightarrow B$ $B \rightarrow C$ $A \rightarrow D$ $D \rightarrow E$ <p>Find the candidate keys, and normalize the relation into 3NF. Explain each step and justify the result.</p>	3	L3
3	<p>Explain the different types of anomalies: insertion, deletion, and update anomalies.</p> <p>How can these anomalies be avoided using lossless decomposition and dependency preservation? Illustrate with examples.</p>	3	L3
4	<p>Define Multivalued Dependency (MVD) and Join Dependency.</p> <p>Explain the concepts of 4NF and 5NF using relevant examples.</p> <p>In what scenarios are these higher normal forms applied in real-life database systems?</p>	3	L3