



**ASSIGNMENT (Hard Deadline: 03.04.2025)**

**VI SEMESTER (CSE)  
SOFT COMPUTING PARADIGMS (CSE\_4054)**

**Max Marks: 10**

<b>Student Name</b>	<b>Reg No</b>	<b>Section</b>	<b>Semester</b>
<b>Student Signature:</b>			

Q.NO.	Question	Marks	BL#
Q1	<p>Explain the Impact of Different Learning Rates in ANN Training; Analyze the Limitations of Fuzzy Inference Systems in High-dimensional Problem Spaces.</p> <p><i>Discuss how varying the learning rate affects the convergence, training time, and accuracy of an ANN model. Provide examples of situations where a high learning rate could be beneficial and situations where it could be detrimental. Based on your understanding, suggest ways to optimize learning rate over epochs for an ideal training process.</i></p>	3	4
Q2	<p>Fuzzy Inference Systems are often used for approximate reasoning in uncertain environments.</p> <p><i>Explain the challenges FIS faces in handling high-dimensional datasets with complex relationships. Discuss possible solutions or hybrid approaches that can mitigate these limitations, and critically analyze their feasibility.</i></p>	3	3
Q3	<p>Develop a Fuzzy Inference System for a Vehicle Speed Control Application.</p> <p><i>Create a Fuzzy Inference System to control vehicle speed based on inputs such as road type, traffic density, and driver's mood (aggressive, neutral, calm). Define membership functions, rules, and apply the Mamdani inference method to calculate speed output based on example input values.</i></p>	4	4

**YOU ARE REQUIRED TO SUBMIT HANDWRITTEN HARDCOPIES.**