K. K. Wagh Institute of Engineering Education & Research, Nashik

(An Autonomous Institute From A.Y. 2022-23)

InSem Examination-IISummer2025	
Exam Seat No.:	
Academic Year:2024-2025	Semester:VI
Class:TY	Program:B.Tech
Branch Code:ETC	Pattern:2022
Name of Course:Neural Network and Fuzzy Control	Course Code:ETC223014(D)
Max. Marks:30	Duration:1.15 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 01 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

		Marks	CO
Question No. 1			
1 a)	**Explain the role of fuzzy systems in artificial intelligence and machine learning**	(7)	CO 1
Question No. 2			
2 a)	**Consider following fuzzy relations R =** $\begin{matrix} 0.6 & 0.3 \\ 0.2 & 0.9 \end{matrix}$ **S=** $\begin{matrix} 1.0 & 0.5 \\ 0.8 & 0.4 \end{matrix}$ **Perform Max-Min composition and find new fuzzy relation T(RoS)**	(8)	CO 1
	OR		
2 b)	**Explain A trapezoidal membership function. A trapezoidal membership function has a = 2, b = 4, c = 8, and d = 10. Find the membership value (μ) for x = 3.5.**	(8)	CO 1
Question No. 3			
3 a)	**Explain the structure of a Artificial neural network (ANN). Describe biological neuron, highlighting its key components**	(7)	CO 2
Question No. 4			
4 a)	**Describe the McCulloch-Pitts neuron model along with its architecture and working principle**	(8)	CO 2
	OR		
4 b)	**What are different learning rules used in ANN? Explain any two learning rules in detail.**	(8)	CO 2

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