25CMP103

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch - **COMPUTER SCIENCE**

AI AND SOFT COMPUTING

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Identify the main goal of Artificial Intelligence. a) Automating physical labor b) Enabling machines to mimic human intelligence c) Building faster hardware only d) Developing new internet protocols	K1	CO1
	2	Select a feature of Hard Computing. a) Tolerance to imprecision b) Exact and precise computation c) Fuzzy reasoning d) Probabilistic approach	K2	CO1
2	3	Recall a disadvantage of Neural Networks. a) Requirement of large amounts of data and training time b) Automatic explanation of decisions c) Absence of overfitting d) Simplicity of implementation	K1	CO2
	4	Define a perceptron in neural networks. a) A non-linear optimization algorithm b) A single-layer neural unit that classifies input c) A type of genetic algorithm d) A fuzzy inference rule	K2	CO2
3	5	Identify the main use of an activation layer in a neural network. a) To add random noise to the data b) To introduce non-linearity into the model c) To store training history d) To reduce the number of neurons	K1	CO3
	6	State the process of crossover in a Genetic Algorithm. a) Combining parts of two parent solutions to create offspring b) Selecting the best chromosomes c) Mutating a gene randomly d) Evaluating the fitness function	K2	CO3
4	7	Label the correct definition of a fuzzy set. a) A set with clear, crisp boundaries b) A set where each element has a degree of membership between 0 and 1 c) A set containing only binary numbers d) A set used only in statistics	K1	CO4
	8	Define fuzzy logic. a) A logic system where every statement is strictly true or false b) A binary-based reasoning system c) A statistical method for probability calculation d) A logic system that allows reasoning with degrees of truth between 0 and 1	K2	CO4
5	9	Identify the purpose of defuzzification in fuzzy logic. a) To convert crisp input values into fuzzy sets b) To combine multiple fuzzy rules into a single fuzzy set c) To convert fuzzy output into a crisp (single) value d) To eliminate uncertainty from the system	K1	CO5

Cont...

5	10	Choose an application area of fuzzy logic. a) Washing machines b) Weather prediction c) Automatic camera focusing d) All of the above	K2	CO5

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Differentiate Hard Computing and Soft Computing with examples.	K2	CO1
	(OR)			
	11.b.	Infer the applications of Soft Computing in engineering. Explain about application of Soft Computing.		
2	12.a.	Compare feedforward and recurrent neural networks.	K3	CO2
	(OR)			
	12.b.	Identify the applications and advantages of neural networks.		
3	13.a.	Construct the steps involved in Genetic Algorithm with a neat flow.	K5	CO3
	(OR)			
	13.b.	Evaluate the advantages and limitations of Genetic Algorithms.		
4	14.a.	Demonstrate different membership functions in fuzzy logic with sketches.	K4	CO4
	(OR)			
	14.b.	Analyze Crisp Sets and Fuzzy Sets with examples.		
5	15.a.	Apply fuzzy if–then rules with suitable examples.	K5	CO5
	(OR)			
	15.b.	Assess types of fuzzy inference systems with diagrams.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Inspect the architecture of an artificial neuron with a neat diagram.	K3	CO1
2	17	Apply reinforcement learning to design a simple real-time agent for the maze problem.	K5	CO3
3	18	Experiment encoding, selection, reproduction and mutation in GA with example.	K3	CO3
4	19	Analyze fuzzy logic for control and explain its driving force in engineering.	K4	CO4
5	20	Design a fuzzy controller for temperature control and explain its process.	K6	CO5

Z-Z-Z END