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Examination: Supplementary Examination 2023

Sub: Soft Computing

Sub. Code: MTCSE - 202

Max. Time: 3 Hours

Max. Marks: 75

Note: Follow proper numbering for answering the questions.

SECTION – A

*Attempt all questions.**7 x 5 = 75 Marks*

SL. NO	Questions	Marks	CO	BL
1.	What is Soft Computing? Write some applications of Soft Computing.	5	CO1	L1
2.	What is Genetic Algorithm? How genetic algorithms are used to solve concrete search and optimization problems	5	CO4	L2 L5
3.	Discuss the various python libraries used to implement various soft computing programs	5	CO5	L1
4.	Discuss the significance and scope of soft computing with some trending topics in research.	5	CO6	L2
5.	What is fuzzy logic? Write some applications of it.	5	CO2	L2
6.	Implement AND gate using single layer feed-forward Perceptron model.	5	CO3	L3
7.	What is fuzzy membership function? Discuss the various types of membership functions.	5	CO2	L2

SECTION – B

*Attempt any four out of six questions.**4 x 10 = 40 Marks*

SL. NO	Questions	Marks	CO	BL
1.	What do you mean by the statement “Soft Computing involves partnership of several fields” and this differentiate Soft Computing with Hard Computing	10	CO1	L4
2.	Discuss Fuzzy Inference System with its block diagram. Also discuss various types of Fuzzy Inference System.	10	CO2	L2
3.	Consider two membership functions as follows: Fuzzy Set A = {2, 4, 6, 8, 10}. $\mu_A = \{1, 0.65, 0.5, 0.35, 0\}$ Fuzzy Set B = {2, 4, 8, 10, 12}. $\mu_B = \{0, 0.35, 0.5, 0.65, 1\}$ Find the following: i. $A \cup B$ ii. $A \cap B$ iii. $\sim A$ iv. $\sim B$ v. $\sim (A \cap B)$	10	CO2	L3
4.	Implement X-NOR function using Adaline network.	10	CO3	L3

5.	Using back-propagation network, find the new weights for the given network presented with [1,0] input pattern and target output 1. Use learning rate of $\alpha = 0.4$ and binary sigmoidal activation function.	10	CO3	L3
6.	Discuss the biological analogy of the following - Artificial Neural Network - Genetic Algorithm	10	CO2 CO3	L2

BL – Bloom’s Taxonomy Levels (1 – Remembering, 2 – Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 – Creating)
