K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

December 2023
M.Tech. Program: Artificial Intelligence
PCEC Examination: FY Semester: I Scheme II
Course Code: MEAIC101 and Course Name: Building Blocks of Artificial Intelligence
Date: 26/12/2023 Duration: 2.5 Hours Max. Marks: 60

Instructions:
(1)All questions are compulsory.
(2)Draw neat diagrams wherever applicable.
(3)Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	**Solve <u>any six</u> questions out of eight.**	12		
i)	Differentiate between soft computing and hard computing	2	CO1	U
ii)	State the reason for modifying the weights in neural network	2	CO1	U
iii)	Elaborate on any approach for amalgamating genetic algorithm for optimizing neural networks	2	CO2	U
iv)	Explain the terms, bias and learning rate with an example	2	CO3	U
v)	State the need for speech recognition in AI systems	2	CO1	U
vi)	Compare and contrast between explorative and exploitative	2	CO3	U
vii)	Elaborate any triangular membership function	2	CO3	U
viii)	Elaborate on the efficiency of back propagation algorithm	2	CO3	U
Q.2	**Solve <u>any four</u> questions out of six.**	16		
i)	Elaborate on two encoding methods used in genetic systems	4	CO4	U
ii)	Explain the back propagation algorithm in detail	4	CO3	U
iii)	Explain the various operations that can be performed on fuzzy set used example	4	CO5	U
iv)	Design a neural network to predict if the patient is pre-diabetic or not, also clearly mention the steps used to design the same	4	CO3	AP
v)	For real world problem scenario, Explain how you will implement	4	CO2	AN

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	supervised learning in soft computing environment.			
vi)	Apply Neuro Genetic system to explain the significance of real world problems	4	CO6	AP
Q.3	**Solve <u>any two</u> questions out of three.**	16		
i)	Elaborate on the depth first search technique using an example	8	CO1	AP
ii)	For any travelling sales man problem, apply and elaborate the genetic algorithm applied	8	CO4	AP
iii)	For a fuzzy relation A and B defined as follows, A = [0.2 0.4 0.6 03 0.1] B = [0.3 0.5 0.21 0.60 0.8 0.4] Compute the max-min composition and justify the same	8	CO5	AN
Q.4	**Solve <u>any two</u> questions out of three.**	16		
i)	Explain how recurrent neural network can be applied to solve the text creation problem	8	CO3	AP
ii)	Elaborate on the steps used to preform crossover and mutation with an example	8	CO4	AP
iii)	Explain the Breadth first search technique using a suitable example	8	CO1	AP

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