GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER– 1 (NEW) • EXAMINATION – WINTER - 2022

Subject Code: 3710721   **Date: 27 Feb 2023**
Subject Name: AI Techniques
Time:10:30 AM TO 01:00 PM   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Which capacities/properties of the mind is referred as intelligence? Discuss the underlying assumptions of AI.	**07**
	(b)	How AI is considered as a research area particularly for Electrical Engineering	**07**
Q.2	**(a)**	How do you justify that the expert systems can be a part of AI?	**07**
	(b)	Compare biological Neuron system with Artificial neuron Network	**07**

OR

	(b)	Compare soft computing technique with hard computing systems	**07**
Q.3	**(a)**	What is training of ANN? Describe back propagation algorithm with example for one iteration.	**07**
	(b)	Explain the advantages and uses of Redial basis neural network. Compare it with feed forward neural network	**07**

OR

Q.3	**(a)**	Discuss advances in neural networks for data reduction in training of ANN	**07**
	(b)	How ANN is used for condition monitoring of transformer? Explain each steps in detail with justification (Assume necessary data as per requirements)	**07**
Q.4	**(a)**	What are the major function/role performed by a fuzzy rule based systems? Explain these in your own words	**07**
	(b)	What is defuzzification? Explain methods of defuzzification	**07**

OR

Q.4	**(a)**	Consider the following applicants for selection of basketball player. The requirement for being a professional basketball player is that the candidate must be tall and that the candidate must be quick. Explain the steps "how fuzzy logic can be used to select the appropriate candidate".	**07**

Sr. No.	Name of Candidate	Height in meters	Speed in meter/second
1	Amit Patel	0.97	65
2	Nilesh Patel	1.65	30
3	Vinod Kumar	1.75	27
4	Vardhman Patel	1.78	32
5	Kalpesh Kumar	1.85	31
6	Vihang Kumar	1.02	45

(b) Explain the terms using appropriate example (i) Linguistic Variable (ii) Mamdani Fuzzy interference system and (iii) Sugeno Fuzzy interference system   **07**

Q.5 **(a)** How Genetic Algorithm (GA) is preferred over conventional optimization method. Explain Cromosome, individual and population   **07**

(b) Discuss application of genetic algorithm for economical load dispatch.   **07**

OR

Q.5 **(a)** Explain the working of GA using flowchart.   **07**

(b) What is selection in GA? Which are the methods used for selection? Explain one of them   **07**

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