Q. P. Code: 24791

(3 Hours) Max. Marks: 80

N. B:
1. Question **ONE** is compulsory.
2. Attempt any **THREE** out of remaining.
3. **Figures** to the **right** indicate **full** marks.
4. Assume suitable data if **necessary**.

Qu-1	a)	Distinguish between Soft computing and Hard computing.	5
	b)	For a fuzzy set, $A = \left\{ \frac{0.5}{x1} + \frac{0.4}{x2} + \frac{0.7}{x3} + \frac{0.8}{x4} + \frac{1}{x5} \right\}$ perform Fuzzy complement operation on A.	5
	c)	List different operators in Genetic Algorithm. Explain any one in detail.	5
	d)	What is artificial neural network? Define characteristics and applications of artificial neural network.	5
Qu-2	a)	Explain Character Recognition Application with suitable example. Assume necessary parameters such as input-output pairs, learning rate, error threshold etc. Clearly state the impact of learning rate and error threshold on Character Recognition Application.	10
	b)	Explain perceptron learning with the help of an example.	10
Qu-3	a)	State the Classification of GA and explain in detail the concept "Problem solving using GA".	10
	b)	Explain in detail Adaptive Neuro-Fuzzy Inference Systems with suitable architecture.	10
Qu-4	a)	Explain architecture of BAM. How storage and retrieval is performed in BAM.	10
	b)	Give weight matrix of Mc Culloch-Pitts neuron model for binary AND function.	10
Qu-5	a)	With suitable example explain max-min composition and max-product composition.	10
	b)	Explain Backpropagation algorithm in detail with the help of flowchart.	10
Qu-6		Attempt the following	20
	a)	Radial Basis Function Networks	
	b)	Fuzzy Composition Rules	
	c)	Delta Learning Rule.	
	d)	Defuzzification	

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