

University of Mumbai
Examination 2020 under cluster 2 (FRCRCE)

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VII

Course Code: ELX7052 and Course Name: Artificial Intelligence

Time: 1 hour

Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	What is shape of dendries like
Option A:	oval
Option B:	round
Option C:	tree
Option D:	rectangular
Q2.	What is perceptron?
Option A:	a single layer feed-forward neural network with pre-processing
Option B:	an auto-associative neural network
Option C:	a double layer auto-associative neural network
Option D:	a neural network that contains feedback
Q3.	Supervised Learning is
Option A:	learning with the help of examples
Option B:	learning without teacher
Option C:	learning with the help of teacher
Option D:	learning with computers as supervisor
Q4.	If the weight matrix stores the given patterns, then the network becomes?
Option A:	autoassociative memory

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Option B:	heteroassociative memory
Option C:	multidirectional associative memory
Option D:	temporal associative memory
Q5.	In Membership function graph x-axis represent?
Option A:	universe of discourse
Option B:	degrees of membership in the [0, 1] interval
Option C:	degrees of discourse
Option D:	Universe of membership
Q6.	What is an activation value?
Option A:	weighted sum of inputs
Option B:	threshold value
Option C:	main input to neuron
Option D:	input at synapse
Q7.	Which activation function is represented by following equation? $f(x) = \begin{cases} 1, & x \geq \theta \\ 0, & x < \theta \end{cases}$
Option A:	Identity function
Option B:	Binary Step function
Option C:	Bipolar step function
Option D:	tan function
Q8.	What is the purpose of ART?
Option A:	take care of approximation in a network
Option B:	take care of update of weights
Option C:	take care of pattern storage
Option D:	take care of stability plasticity dilemma

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Q9.	A fuzzy set whose membership function has at least one element x in the universe whose membership value is unity is called
Option A:	sub normal fuzzy sets
Option B:	normal fuzzy set
Option C:	convex fuzzy set
Option D:	concave fuzzy set
Q10.	Why is the training of basis function is faster than MLFFNN?
Option A:	because they are developed specifically for pattern approximation
Option B:	because they are developed specifically for pattern classification
Option C:	because they are developed specifically for pattern approximation or classification
Option D:	because they are developed to solve non linear problems
Q11.	How is weight vector adjusted in basic competitive learning?
Option A:	such that it moves towards the input vector
Option B:	such that it moves away from input vector
Option C:	such that it moves towards the output vector
Option D:	such that it moves away from output vector
Q12.	How are weights updated in feature maps?
Option A:	updated for winning unit only
Option B:	updated for neighbors of winner only
Option C:	updated for winning unit and its neighbors
Option D:	updated on all neurons
Q13.	The equation given below designates to which fuzzy set operation? $\mu(x) = \mu A(x) + \mu B(x) - \mu A(x) \cdot \mu B(x)$
Option A:	union

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Option B:	intersection
Option C:	algebraic sum
Option D:	algebraic difference
Q14.	Identify the following fuzzy set property $\widetilde{A} \cup (\widetilde{B} \cup \widetilde{C}) = (\widetilde{A} \cup \widetilde{B}) \cup \widetilde{C}$
Option A:	Commutativity
Option B:	Associativity
Option C:	Distributivity
Option D:	Idempotency
Q15.	In hopfield model with symmetric weights, network can move to?
Option A:	lower
Option B:	higher
Option C:	lower or higher
Option D:	lower or same
Q16.	What does vigilance parameter in ART determines?
Option A:	number of possible outputs
Option B:	number of desired outputs
Option C:	number of acceptable inputs
Option D:	the tolerance of matching process
Q17.	What is the objective of backpropagation algorithm?
Option A:	to develop learning algorithm for multilayer feedforward neural network
Option B:	to develop learning algorithm for single layer feedforward neural network
Option C:	to develop learning algorithm for multilayer feedforward neural network, so that network can be trained to capture the mapping implicitly
Option D:	to develop algorithm for feedback networks.

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Q18.	The following equation is used to represent _____ membership function $\mu_A(x) = \begin{cases} 0 & \text{if } x \leq a \\ \frac{x-a}{b-a} & \text{if } a \leq x \leq b \\ \frac{c-x}{c-b} & \text{if } b \leq x \leq c \\ 0 & \text{if } x \geq c \end{cases}$
Option A:	Triangular Membership function
Option B:	Trapezoidal Membership function
Option C:	Gaussian function
Option D:	Zadeh's function
Q19.	Which activation function is represented by following equation? $f(x) = \frac{2}{1 + e^{-x}} - 1$
Option A:	Identity function
Option B:	Binary Sigmoidal function
Option C:	Bipolar Sigmoidal function
Option D:	Step function
Q20.	Does backpropagaion learning is based on gradient descent along error surface?
Option A:	yes
Option B:	no
Option C:	cannot be said
Option D:	it depends on gradient descent but not error surface
Q21.	A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 3, 2 and 1 respectively. What will be the output?
Option A:	30
Option B:	40

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Option C:	50
Option D:	60
Q22.	Function of the dendrites is_____
Option A:	receptor
Option B:	transmitter
Option C:	both receptor and transmitter
Option D:	processing
Q23.	"The train is running fast" . Here 'fast' can be represented by
Option A:	fuzzy set
Option B:	crisp set
Option C:	Fuzzy and crisp set
Option D:	Classical set
Q24.	Consider the two fuzzy sets $\tilde{A} = \left\{ \frac{1}{2} + \frac{0.3}{4} + \frac{0.5}{6} + \frac{0.2}{8} \right\}$ $\tilde{B} = \left\{ \frac{0.5}{2} + \frac{0.4}{4} + \frac{0.1}{6} + \frac{1}{8} \right\}$ $\tilde{B} \cap \tilde{A}^c = ??? =$
Option A:	$\left\{ \frac{1}{2} + \frac{0.4}{4} + \frac{0.6}{6} + \frac{1}{8} \right\}$
Option B:	$\left\{ \frac{0.5}{2} + \frac{0.3}{4} + \frac{0.1}{6} + \frac{0.2}{8} \right\}$
Option C:	$\left\{ \frac{0.5}{2} + \frac{0.3}{4} + \frac{0.5}{6} + \frac{0}{8} \right\}$
Option D:	$\left\{ \frac{0}{2} + \frac{0.4}{4} + \frac{0.1}{6} + \frac{0.8}{8} \right\}$

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Q25.	A 4 input neuron has weights 1,2,3 and 4 . The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4,10,5 and 20 respectively. The output will be:
Option A:	238
Option B:	76
Option C:	119
Option D:	123