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Reg. No. : | | | | | | | | | | |

Question Paper Code: 59315

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Elective

Electrical and Electronics Engineering

15UEE915 – NEURAL NETWORK AND FUZZY SYSTEM

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Who is the founder of fuzzy logic? CO1- R

   (a) Aristotle (b) Buddha (c) Lotfi. A Zadeh (d) Bart Kosko

2. The _____ of a membership function for some fuzzy set $\tilde{A}$ is defined as that region of the universe that is characterized by complete and full membership in the set A. CO1 -R

   (a) Core (b) Support (c) Boundary (d) Edge

3. Fuzzy logic is usually represented as CO2 -R

   (a) IF-THEN-ELSE rules (b) IF-THEN rules (c) Both a & b (d) None

4. _____tend to concentrate the elements of a fuzzy set by reducing the degree of membership of all elements that are only "partly" in the set. CO2- R

   (a) Concentrations (b) dilations (c) Intensification (d) None of the above

5. A typical biological cell has these _____ regions CO3- R

   (a) Soma and Axon (b) Axon

   (c) Dendrite and axon (d) Soma, axon and dendrite

6. Ability to learn how to do tasks based on the data given for training or initial experience CO3- R

   (a) Self organization (b) Adaptive learning (c) Fault tolerance (d) Robustness

7. Gradient-type neural networks are generalized Hopfield networks in which the computational energy decreases continuously in _____ CO4 -R

   (a) computation (b) distance (c) iteration (d) time

8. Hopfield nets normally have units that take on values of CO4 -R

(a) 1 or -1 (b) 1 (c) -1 (d) 0

9. Fuzzy logic has been very successful in _____ applications. CO5 -R

(a) Washing Machines (b) Air Conditioners (c) Dish Washers (d) All of these

10. Neural network applications to power system can be categorized into CO5- R

(a) Regression (b) Classification (a) Regression (b) Classification

PART – B (5 x 2= 10Marks)

11. What do you meant by contradiction in fuzzy systems? CO1- R

12. Differentiate fuzzification and defuzzification CO2 -R

13. Distinguish artificial neural network and biological network CO3 -R

14. Define Hamming Distance CO4 -R

15. Discuss the role of ANN in power systems. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Brief the properties of CO1- R (16)
(i) Classical sets
(ii) Fuzzy relations

Or

(b) (i) Write the mathematical expression of the membership function and sketch of the membership function CO1- U (8)

(ii) With a neat sketch of Ven diagrams, discuss about the operation of crisp sets. CO1 -U (8)

17. (a) (i) Explain in detail about fuzzy rule based system CO2-U (10)

(ii) Brief about linguistic variables and hedges used in fuzzy systems CO2- U (6)

Or

(b) With a neat block diagram explains the various blocks in FLC CO2 -U (16)

18. (a) Demonstrate OR function using Hebb net with Bipolar inputs and targets CO3 -U (16)

Or

	(b)	Explain with a neat block diagram, flowchart and algorithm for back propagation training algorithm employed in neural networks.	CO3 -U	(16)
19.	(a)	Explain the architecture, Training and Testing Algorithms of Auto Associative Neural Network	CO4 -U	(16)
		Or		
	(b)	Elaborate the performance of bidirectional associative memory with stability considerations in artificial neural networks with neat diagram	CO4- Ana	(16)
20.	(a)	State the inverted pendulum problem. Discuss the design of a neuro-controller for the same	CO5- App	(16)
		Or		
	(b)	Illustrate how neural network concept can be implemented in inverted pendulum applications	CO5-App	(16)

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