

Roll No.

Total Printed Pages - 9

F- 1063

M.Sc. (IT) (Fourth Semester)
EXAMINATION, May - June, 2022
 (New Course)
SOFT COMPUTING
 M.Sc. (IT)
 (402)

*Time : Three Hours]**[Maximum Marks:100**[Minimum Pass Marks:40***Note: Attempt all sections as directed.****Section - A****(Objective/Multiple Type Questions)****(1 mark each)****Note: Attempt all questions.****Choose the correct answer.**

1. The support of fuzzy set A is the set of all points x in X (is the universe of discourse) such that:
 - (A) $\mu_A(x) > 0$
 - (B) $\mu_A(x) = 1$
 - (C) $\mu_A(x) = 0.5$
 - (D) $\mu_A(x) \neq 1$
2. The cardinality of the fuzzy set on any universe is:
 - (A) Infinity
 - (B) 0
 - (C) 1
 - (D) -1
3. Defuzzification is done to obtain
 - (A) The best rule to follow
 - (B) Precise fuzzy rule
 - (C) Crisp Output
 - (D) None of the above
4. Which of the following cannot be stated using fuzzy logic?
 - (A) Color of an apple
 - (B) Height of a person
 - (C) Speed of a car
 - (D) Date of birth of a person

[3]

5. Both fuzzy logic and artificial neural network are soft computing techniques because
 - (A) Both give precise and accurate results
 - (B) Artificial neural network gives accurate result, but fuzzy logic does not
 - (C) In each, no precise mathematical model of the problem is required.
 - (D) Fuzzy gives exact result, but artificial neural network does not
6. Signal transmission at synapse is a-
 - (A) Physical process
 - (B) Chemical process
 - (C) Physical and chemical both
 - (D) None of the mentioned
7. What is Hebb's rule of learning?
 - (A) The system learns from its past mistakes.
 - (B) The system recalls previous reference inputs and respective ideal outputs.
 - (C) The strength of neural connection get modified accordingly.
 - (D) None of the mentioned
8. What was the name of the first model which can perform weighted sum of inputs?
 - (A) McCulloch-Pitts neuron model
 - (B) Marvin Minsky neuron model
 - (C) Hopfield model of neuron
 - (D) None of the mentioned

F-1063

P.T.O.

[4]

9. The process of adjusting the weight is known as -
 - (A) Activation
 - (B) Synchronisation
 - (C) Learning
 - (D) None of the mentioned
10. Who invented perceptron neural network?
 - (A) McCulloch Pitts
 - (B) Widrow
 - (C) Minsky and Papert
 - (D) Rosenblatt
11. What is ADALINE in neural networks?
 - (A) Adaptive linear element
 - (B) Automatic linear element
 - (C) Adaptive line element
 - (D) None of the mentioned
12. What was the main point of difference between the Adaline and perceptron model?
 - (A) Weights are compared with output.
 - (B) Sensory units result is compared with output.
 - (C) Analog activation value is compared with output
 - (D) All of the mentioned
13. In supervised learning, training set of data includes
 - (A) Input
 - (B) Output
 - (C) Both Input and Output
 - (D) None

F-1063

[5]

14. Which of the following is not true for genetic algorithms?
- (A) It is probabilistic search algorithm
 - (B) It is guaranteed to give global optimum solutions.
 - (C) If an optimization problem has more than one solution, then it will return all the solutions.
 - (D) It is an iterative process suitable for parallel programming.
15. Which one of the following is not necessarily be considered as GA parameters?
- (A) N , the population size
 - (B) ϵ , the obtainable accuracy
 - (C) μ_p , the mutation probability
 - (D) f , the average fitness score
16. The cross over technique, which may suffer from end-point bias is-
- (A) Two - point crossover
 - (B) Single - point crossover
 - (C) Uniform crossover
 - (D) Half uniform crossover
17. The back propagation learning algorithm is used to train
- (A) A single layer feed forward neural network only
 - (B) A multiple layer feed forward neural network only
 - (C) A recurrent neural network only
 - (D) Any artificial neural network

F-1063

P.T.O.

[6]

18. This MATLAB command clears all data and variables stored in memory:
- (A) Clc
 - (B) clear
 - (C) delete
 - (D) deallocate
19. Which of the following is used to analyze and visualize the data in MATLAB?
- (A) Pspice
 - (B) Power world simulator
 - (C) Simulink
 - (D) PCAD
20. Which is the invalid variable name in MATLAB?
- (A) x6
 - (B) Last
 - (C) 6x
 - (D) Z

Section - B

(Very Short Answer Type Questions)

(2 marks each)

Note: Attempt all questions. Write answer in 2-3 sentence.

1. What is soft computing?
2. Give some application areas of fuzzy computing.
3. What is learning in context of soft computing?

F-1063

[7]

4. Draw diagram to show the working of biological neural network.
5. Define weight and threshold in ANN.
6. What is associative memory network?
7. Genetic algorithms are inspired by “survival of the fittest” Explain.
8. What do you understand by evolutionary computing?
9. What is fuzzy intelligent system?
10. What are different uses of MATLAB?

Section - C

(Short Answer Type Questions)

(3 marks each)

Note: Attempt all questions. Answer precisely using <75 words.

1. Define fuzzy set. Differentiate fuzzy set and crisp set.
2. Given two fuzzy sets A and B
 $A = \{(x_1, 0.5), (x_2, 0.1), (x_3, 0.4)\}$ and
 $B = \{(x_1, 0.2), (x_2, 0.3), (x_3, 0.5)\}$. Then find the union and intersection of A and B.
3. Draw and explain artificial neural network model.
4. What is activation function? Explain various activation function.
5. What is delta learning rule? Name the networks that follows delta learning rule.

[8]

6. What is perception? Draw perception model.
7. What is fuzzy relation? Explain with example.
8. What do you understand by optimization? Name some optimization methods.
9. Write and explain simple genetic algorithm.
10. What are the features of MATLAB?

Section - D

(Long Answer Type Questions)

(6 marks each)

Note: Attempt all questions.

1. What is fuzzy inference? What are different procedures for fuzzy inference?

OR

What is fuzzy system? Explain various components of fuzzy system.

2. What is artificial neural network? Explain different types of neural network architecture.

OR

Describe and differentiate different types of learning.

3. Draw ADALINE architecture and write algorithm.

OR

Give algorithm for back propagation network.

4. What are different operators involved in genetic algorithm?

OR

Explain the operation of simple genetic algorithm with a neat flow chart.

[9]

5. Write short notes on simulink tool of MATLAB.

OR

How matrix operations can be performed using MATLAB?