BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – M.Tech.(CSE)-AIML-2022/M.Tech.(CSE)-AIML-2023
Course Name – Soft Computing
Course Code - PCC-MCSM202
(Semester II)

Full Marks : 60   Time : 2:30 Hours
[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question)   1 x 15=15

1. *Choose the correct alternative from the following :*

(i)   Recognize who invented the term Soft Computing?
    a) Charles Darwin   b) Lofti A Zadeh
    c) Rechenberg   d) Mc_Culloch

(ii) Identify the correct option, single-layer networks are also known as:
    a) Perceptrons   b) Multilayer perceptrons
    c) Backpropagation networks   d) Convolutional neural networks

(iii) Select the meaning of expert systems?
    a)
    Combining different types of method or   b) Approach to the design of learning
    information   algorithms that is structured along the lines
                                                    of the theory of evolution
    c) An information base filled with the   d)
    knowledge of an expert formulated in terms   None of these
    of if-then rules

(iv) Identify the correct option, in a multilayer feedforward network, information flows:
    a) Only forward   b) Only backward
    c) Bidirectionally   d) Randomly

(v)   Identify the primary mechanism behind backpropagation.
    a) Gradient descent   b) Random weight initialization
    c) Activation functions   d) Dropout

(vi) Select the membership functions are generally represented in
    a) Tabular Form   b) Graphical Form
    c) Mathematical Form   d) Logical Form

(vii) Choose the no. of steps crossover operator proceeds

    a) 5   b) 4

    c) 3   d) 2

(viii) Choose fuzzy operator(s) that are utilized in fuzzy set theory?

    a) OR   b) AND

    c) NOT   d) All of the above

(ix) To solve the values of set membership, which is most appropriate

    a) Probabilities   b) Degree of truth

    c) Discrete set   d) None

(x) Discuss the appropriate concept for unsupervised learning

    a) Some specific output values aren't disclosed   b) No relevant inputs value is specified

    c) Some specific output values are disclosed   d) None

(xi) Describe the condition that can directly influence a variable by all the others

    a) Local connected   b) Fully connected

    c) Partially connected   d) None

(xii) Select the correct example of active learning?

    a) News Recommender System   b) Automated Vehicle

    c) Dust Cleaning Machine   d) None

(xiii) Select the technique that is not applicable characteristic of genetic algorithms?

    a) Population-based   b) Iterative

    c) Deterministic   d) Stochastic

(xiv) Select the main deviation in perceptron model from that of MP model?

    a) more inputs can be incorporated   b) learning enabled

    c) all of the mentioned   d) none of the mentioned

(xv) Select the proper task of Axon.

    a) Receptors   b) transmitter

    c) transmission   d) none of the mentioned

Group-B
(Short Answer Type Questions)   3 x 5=15

2. Describe fuzzy Union and Intersection operation   (3)
3. State the applications of competitive learning in unsupervised learning tasks. (3)
4. Establish role of fitness function in GA   (3)
5. Explain various types of crossover and mutation techniques.   (3)
6. Explain the solution of typical control problems using Genetic Algorithm (3)

OR

Analyze the properties of adaptive resonance theory?   (3)

Group-C
(Long Answer Type Questions)   5 x 6=30

7. State the difference between Supervised Vs. Unsupervised Learning of ANN. (5)
8. Analyze the basic steps of Genetic Algorithm used for solving optimization problems (5)
9. Define the Unsupervised Learning.   (5)
10. Analyze the basic model of Artificial Neural Network?   (5)
11. Illustrate the stability analysis of fuzzy control systems   (5)
12. Analyze the concept of tabu search method for solving optimization problems (5)

OR

Using the inference approach, calculate the membership value for the triangular shapes , , , (5)
and for a triangle with angle 45° , 55° and 80°

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