(6 pages) Reg. No. : .....

Code No. : 7736 **Sub. Code : ZCIM 22**

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2023

Second Semester

Computer Science with Artificial Intelligence – Core

SOFT COMPUTING

(For those who joined in July 2021 – 2022)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. An ———— may be defined as an information – processing model that is inspired by the way biological nervous system.
   (a) Machine Learning
   (b) Soft computing
   (c) Artificial Neural Network
   (d) None

2. Which carries the impulses of the neuron.
   (a) Soma (b) Cell body
   (c) Dendrites (d) Axon

3. The perception network consists of ———— Units.
   (a) Sensory (b) Associator
   (c) Response (d) All the above

4. ———— Hopfield network and its architecture as a single layer feedback network can be called as recurrent.
   (a) Discrete (b) Continuous
   (c) Both (a) and (b) (d) None

5. A fuzzy logic system accepting imprecise data and providing a ————
   (a) Concept (b) Decision
   (c) Application (d) None

6. The ———— between two sets represents all those elements in the universe that simultaneously belong to both the sets.
   (a) Intersection (b) Union
   (c) Both (a) and (b) (d) None

7. Fuzzy quantifiers are ————
   (a) Most (b) Several
   (c) Many (d) All the above

8. In ———— the imprecision is in the prescription of the boundaries of a set.
   (a) Fuzzy measure (b) Fuzzy sets
   (c) Both (a) and (b) (d) None

9. The ———— of the individual in a GA is the value of an objective function for its prototype.
   (a) Fitness
   (b) Genes
   (c) Individual Groups
   (d) None

10. ———— encoding uses string made up of numbers (0 to 7)
    (a) Binary (b) Octal
    (c) Hexadecimal (d) None

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Differentiate: Soft computing versus Hard computing.

    Or

    (b) What is Artificial Neural Network?

12. (a) What do you mean by full counter propagation Net?

    Or

    (b) Give a brief note on unsupervised learning network.

13. (a) What is the difference between crisp set and Fuzzy set?

    Or

    (b) What do you mean by Fuzzy composition?

14. (a) Describe about Extension Principle.

    Or

    (b) Write short note on Aggregation of Fuzzy rules.

15. (a) List out the applications of Genetic algorithms.

Or

(b) Define the terms: Individuals, Genes, Fitness.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) List out and explain the basic terminologies used in ANN.

Or

(b) With neat diagram, explain Hebb Network.

17. (a) What is Perceptron Network? Give a short note on it.

Or

(b) Expand and explain Madaline.

18. (a) What do you mean by Tolerance and Equivalence Relation?

Or

(b) What is Defuzzification? Explain its methods.

19. (a) Discuss in detail about Fuzzy Decision Making.

Or

(b) What do you mean by Approximate Reasoning? Explain its types.

20. (a) What is Genetic programming? Explain its working principle and its characteristics.

Or

(b) Explain in detail about crossover operation in Genetic algorithm.

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