

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

Second Semester

Computer Science with Artificial Intelligence – Core

SOFT COMPUTING

(For those who joined in July 2022 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. An ANN is endowed with the ability to learn how to do tasks based on the data given for training or initial experience : _____.
 (a) Self-organization
 (b) Adaptive learning
 (c) Fault tolerance
 (d) Real time operation

2. _____ : where the nerve is connected to the cell body.
 (a) Cell body (b) Soma
 (c) Axon (d) Dendrites
3. The binary activation function is used in _____ units.
 (a) Sensory (b) Association
 (c) Both (a) and (b) (d) None
4. The _____ performs forward and backward associated searches for stored stimulus responses.
 (a) BAM Network
 (b) Boltzmann machine
 (c) Hopfield
 (d) None
5. A _____ is a collection of distinct objects.
 (a) Fuzzy sets
 (b) Crisp sets
 (c) Both (a) and (b)
 (d) None

6. _____ between two sets gives all those elements in the universe that belong to either Set A or Set B or both set A and B.
 (a) Union (b) Intersection
 (c) Both (a) and (b) (d) None
7. Fuzzy-predicate Modifiers are _____.
 (a) very (b) fairly
 (c) rather (d) all the above
8. An _____ imprecision is in the assignment of an element to one of two or more crisp sets.
 (a) Fuzzy set (b) Fuzzy measure
 (c) Both (a) and (b) (d) None
9. _____ are the basic instruction for building GA.
 (a) Genes (b) Fitness
 (c) Individual (d) None
10. _____ encoding uses string made up of numbers 0 and 1.
 (a) Octal (b) Binary
 (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) Write down the applications of soft computing applications.
 Or
 (b) Differentiate : Brain versus computer.
12. (a) What is Bidirectional Associative memory?
 Or
 (b) Give a brief note on ART networks.
13. (a) What are the operations will be done on fuzzy set? Explain any two.
 Or
 (b) Write short note on properties of Fuzzy sets.
14. (a) What do you mean by Belief and Plausibility measures?
 Or
 (b) What is Expert System?
15. (a) Differentiate : Traditional Algorithm versus genetic Algorithm.
 Or
 (b) Define the terms flipping and interchanging in Mutation.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Discuss in detail about the basic models of Artificial Neural Network.

Or

- (b) With neat diagram, explain Mcculloch Pilts Neuron Model.

17. (a) Expand and explain Adaline.

Or

- (b) What is Hopfield Network? Explain.

18. (a) What do you mean by Fuzzification? Give a brief note on methods of membership value assignments?

Or

- (b) Write short note on the following:

- (i) Fuzzy relation
- (ii) Fuzzy composition.

19. (a) Discuss in detail about Fuzzy logic Control systems.

Or

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

20. (a) How do you classify Genetic algorithms? Explain any three.

Or

- (b) What is Fitness Function? Describe Encoding operation in Genetic algorithms.
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