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GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022
 B. Tech Degree Examinations, December – 2020
 (Seventh Semester)
BCSOE 7053 – SOFT COMPUTING TECHNIQUES
 (AEI, CSE, ECE and IT)

Time: 2 hrs

Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)

(1 x 10 = 10 Marks)

Q.1. Answer ALL questions

- a. Who initiated the idea of Soft Computing?
 - (i) Charles Darwin
 - (ii) Rechenberg
 - (iii) Lofti A Zadeh
 - (iv) Mc_Culloch
- b. Fuzzy Computing
 - (i) mimics human behaviour
 - (ii) deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic
 - (iii) doesnt deal with 2 valued logic
 - (iv) All of these
- c. Genetic Algorithm are a part of
 - (i) Evolutionary Computing
 - (ii) are adaptive heuristic search algorithm based on the evolutionary ideas of natural selection and genetics
 - (iii) inspired by Darwin's theory about evolution - "survival of the fittest"
 - (iv) All of these
- d. What are the 2 types of learning?
 - (i) Improvised and unimprovised
 - (ii) supervised and unsupervised
 - (iii) Layered and unlayered
 - (iv) None of the above
- e. Conventional Artificial Intelligence is different from soft computing in the sense
 - (i) Conventional Artificial Intelligence deal with prdicate logic where as soft computing deal with fuzzy logic
 - (ii) Conventional Artificial Intelligence methods are limited by symbols where as soft computing is based on empirical data
 - (iii) Both (i) and (ii)
 - (iv) None of the above
- f. Artificial neural network used for
 - (i) Pattern Recognition
 - (ii) Classification
 - (iii) Clustering
 - (iv) All of these
- g. Ability to learn how to do tasks based on the data given for training or initial experience
 - (i) Self Organization
 - (ii) Adaptive Learning
 - (iii) Fault tolerance
 - (iv) Robustness
- h. Each connection link in ANN is associated with _____ which has information about the input signal.
 - (i) neurons
 - (ii) weights
 - (iii) bias
 - (iv) activation function

- i. Membership function can be thought of as a technique to solve empirical problems on the basis of
- (i) knowledge (ii) learning
 (iii) examples (iv) experience
- j. A fuzzy set whose membership function has at least one element x in the universe whose membership value is unity is called
- (i) sub normal fuzzy sets (ii) normal fuzzy set
 (iii) convex fuzzy set (iv) concave fuzzy set

PART – B: (Short Answer Questions)

(2 x 5 = 10 Marks)

Q.2. Answer ALL questions

- How fuzzy sets are different from crisp sets?
- Explain the role of Crossover operation in genetic modelling.
- Mention four real life applications of Genetic algorithm.
- Why back propagation is usually used for in neural networks?
- Write two best and optimum way for choosing the most effective input parameters in soft computing modelling?

PART – C: (Long Answer Questions)

(6 x 5 = 30 Marks)

Answer ANY FIVE questions

Marks

- Explain the architecture of a back propagation neural network with suitable input processing to generate the target output. (6)
- Explain the single layer Neural Network architecture using Perception model with suitable activation function (6)
- Name and explain different fuzzy membership functions with a diagram (6)
- What is BAM? Explain the learning procedure of BAM. (6)
- Explain in details about the Genetic Algorithm. (6)
- Define fitness function and its characteristics. Explain the importance of fitness approximation in genetic algorithm. (6)
- Write notes on Fuzzy Associative Memories. (6)
- What is the significance of hybrid system in soft computing? Explain Neuro Fuzzy Hybrid systems with advantages and disadvantages. (6)

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