Dr. A.P.J. Abdul Kalam Technical University (AKTU) · B.Tech Theory Examination

Application of Soft Computing

KCS056 · 2022

Time: 3 Hours **Max. Marks: 100**

Attempt all Sections.
If require any missing data; then choose suitably.

SECTION A

1(a)	Define Soft Computing. How is it different from conventional computing?	2	U1
1(b)	What is difference between auto associative memory and hetero associative Memory?	2	U1
1(c)	Write down the applications of genetic algorithm.	2	U5
1(d)	What is a self organizing map?	2	U1
1(e)	What is a membership function in a fuzzy set?	2	U4
1(f)	If A = {1/1, 0.7/1.5, 0.2/2, 0.6/2.5} and B = {0.2/1, 0.3/1.5, 0.7/2, 0.1/2.5} find the Algebraic sum of the given fuzzy sets.	2	U3
1(g)	What are the basic components of ANN?	2	U1
1(h)	What is meant by threshold logic unit?	2	U1
1(i)	Why do we use bias function in neural network?	2	U1
1(j)	What is Adaptive learning?	2	U1

SECTION B

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2(a)	How crossover used in a GA? Explain the types of crossover with example.	10	U5
2(b)	How is weight adjustment done in back propagation network?	10	U2
2(c)	What is Defuzzification? Explain all the three methods which are used in Defuzzification with an example?	10	U4
2(d)	What is Multilayer perceptron? How is different from single layer perceptron?	10	U2
2(e)	Discuss neuro fuzzy system and rule base structure identification in detail.	10	U4

SECTION C

3(a)	How back propagation network works in ANN? Write an algorithm for it.	10	U2
3(b)	Explain supervised and unsupervised learning in detail.	10	U1
4(a)	Why preceptron is not able to handle the tasks which are not linearly separable? Justify your answer using XOR Problem.	10	U2
4(b)	Write a short notes on the following: (i) Feedback control system (ii) Fuzzy Automata	10	U4
5(a)	Explain the architecture of Kohnen self organizing network.	10	U1
5(b)	Explain Fuzzy Inference System with all its components in detail.	10	U4
6(a)	How can Fitness functions be found for any optimization problem? Maximize the function f(x)=x2 , with x in the integer interval [0,31] with the help of Genetic Algorithm.	10	U5
6(b)	What is Genetic Algorithm? Discuss the working of Genetic Algorithm with the help of flowchart.	10	U5
7(a)	What are fuzzy sets? Discuss the various properties of fuzzy sets?	10	U3
7(b)	Write short note on the following: (i) Fuzzy Controllers (ii) Fuzzy and Crisp relations	10	U4

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