AF-3584

M.Sc. (Final)
Term End Examination, 2017-18

COMPUTER SCIENCE

Paper - V

Soft Computing Techniques

Time : Three Hours] [*Maximum Marks* : 100
[*Minimum Pass Marks* : 36

Note : Answer **all** questions. All questions carry equal marks.

Unit-I

1. (*a*) Define the term Soft Computing and explain the different tools of soft computing.

(*b*) Defferentiate Soft Computing with Hard Computing.

OR

Compute the different tools of Soft Computing according to its characteristics.

Unit-II

2. (*a*) Draw simple single layer neural network architecture and explain its various parts.

(*b*) What do you understand by linear separable problem ? Explain with suitable example.

OR

(*a*) Differentiate supervised learning with unsupervised learning.

(*b*) Write Kohonen learning algorithm in detail.

Unit-III

3. (*a*) Explain the different operations of Fuzzy set.

(*b*) Consider two Fuzzy sets as given below:

$$A = \left\{ \frac{0.2}{\text{train}} + \frac{0.5}{\text{bike}} + \frac{0.3}{\text{boat}} \right\}$$

$$B = \left\{ \frac{1}{\text{train}} + \frac{0.2}{\text{bike}} + \frac{0.4}{\text{boat}} \right\}$$

Find out the following :

(*i*) $A \cup B$

(*ii*) $A \cap B$

(*iii*) Proof De Morgan's Law

OR

(*a*) What are the various properties of Fuzzy set ?

(*b*) Define Fuzzy relation. Explain the various operations of Fuzzy relation.

Unit-IV

4. (*a*) Explain the various encoding methods of Genetic algorithm.

(*b*) Write Pseudocode of basic genetic algorithm along with flow chart.

OR

(*a*) What is the role of Crossover probability and mutation probability ? Explain with suitable example.

(*b*) Write short note on the application of genetic algorithm.

Unit-V

5. (*a*) What do you understand by hybrid soft computing ? Write the names of atleast two hybrid soft computing models.

(*b*) Write the steps of creating a neural network model using any GUI of MATLAB.

OR

Draw the architecture of ANFIS and explain the purpose of each layer in detail.

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