



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

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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) Differentiate Soft Computing with Hard Computing.

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OR

(2)

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

(3)

- (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 at least 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.