

9. What is difference between robot and robotics ? What can robots do ? Explain various components of robot. How are Soft Computing techniques used and useful in robots ? Explain in detail.
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Roll No.

67207

**MCA 5th Semester CBCS Scheme
(w. e. f. 2018-19)
Examination – December, 2018**

SOFT COMPUTING

Paper : 18MCA35C2

Time : Three Hours] [Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) What is role of dendrites in biological neuron ?
- (b) What is axon in biological neuron ?
- (c) What is the significance of weights in artificial neural network ?
- (d) Define activation function.
- (e) Draw fuzzy membership function to describe cold, warm and hot water using your own intuition.

- (f) What is linguistic variable ? Write any *two* linguistic variables.
- (g) What is fuzzy proposition ? Write any *two* fuzzy propositions.
- (h) Write any *two* uses of soft computing techniques in drug design ?

UNIT - I

- 2. (a) What is neural network ? What are the types of problems that can be solved with neural networks ? Discuss its advantages and disadvantages.
- (b) What is soft computing ? Differentiate between soft computing and hard computing.
- 3. (a) Describe the basic principle of genetic algorithm. What are the applications of genetic algorithm ?
- (b) What do you mean by encoding in GA ? Explain different techniques of encoding in GA.

UNIT - II

- 4. (a) What is perceptron net ? Explain the architecture and learning algorithm of perceptron for pattern recognition problem.

- (b) Develop a perceptron for logic AND function with bipolar input and targets.

- 5. (a) What is back propagation network ? Derive the expression for weight updation in a multilayer feed forward neural network using standard back propagation learning.
- (b) Explain in detail about discrete Hopfield network. What kind of applications can be solved using Hopfield network ?

UNIT - III

- 6. (a) What is fuzzy set ? Explain the characteristics of fuzzy sets.
- (b) What do you mean by membership function ? Explain its types and properties.
- 7. (a) Define Fuzzy Logic Controller (FLC) and discuss various steps involved in designing an Fuzzy Logic Controller.
- (b) Explain fuzzy rule base for the air conditioner control.

UNIT - IV

- 8. What is image processing ? Explain the fundamental steps in image processing with the help of block diagram. How are Soft Computing techniques used and useful in image processing ? Explain in detail.