

67244

MCA 5th Semester current scheme with new notes  
maximum marks scheme 80 Examination,  
December - 2015  
SOFT COMPUTING  
Paper-MCA-504

Time allowed : 3 hours ] [Maximum marks : 80

Note : • Attempt five questions in all. Question No. 1 is compulsory and attempt four more questions by selecting one question from each unit.

• All questions carry equal marks.

1. Answer the following questions :
  - (a) Differentiate between hard computing and soft computing.
  - (b) What type of problems are solved using genetic algorithm ?
  - (c) What are the various characteristics of an artificial neural network ?
  - (d) State the importance of back-propagation algorithm.
  - (e) Mention four applications of fuzzy logic controllers in real time world.
  - (f) Explain the role of knowledge based system.

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- (g) What is the use of soft computing in share market analysis ?
- (h) What is mutation ?

### Unit-1

2. (a) What are the objectives of soft computing ? Briefly mention the application area of soft computing.
- (b) What are the various components of biological neurons ? Explain with the help of diagram.
3. (a) What is meant by fuzzy logic ? How it is different from classical logic ? Explain.
- (b) What do you mean by encoding in GA ? Explain its various techniques with the help of example.

### Unit-2

4. (a) Explain the artificial neural network architectures. Write its applications.
- (b) Define activation function, weight, bias and threshold in context of ANN.
5. (a) What are the basic learning laws ? Explain the weight updation rules in each learning law.
- (b) Explain the Hopfield network algorithm. What are its advantages and limitations ?

### Unit-3

6. (a) What is fuzzification ? Explain its different methods in detail.
- (b) Discuss the following terms of fuzzy set theory with example :
- (i) Fuzzy relation
  - (ii) Linguistic variable
  - (iii) Linguistic values
  - (iv) Hedges
7. (a) Write short note on :
- (i) Fuzzy clustering
  - (ii) Fuzzy inference system
- (b) What do you mean by neuro-fuzzy control ? Explain with the help of example.

### Unit-4

8. (a) What is image compression ? How artificial neural network is useful and used in image compression? Explain in detail.
- (b) What do you mean by robotics and sensors ? Explain the role of soft computing techniques in robotics.
9. Write short note on following applications of soft computing :
- (i) Pattern Recognition
  - (ii) Natural Language Processing