

Roll No.

Total Pages : 03

CCMTE/D-23

24061

INTELLIGENT SYSTEMS

MT-CSE-20-14(i)

Time : Three Hours]

[Maximum Marks : 75

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

Compulsory Question

- 1.** (a) What is the difference between crossover and mutation operations in Genetic Algorithm ? Illustrate.
(b) What are the different categories of knowledge representation schemes ? Discuss.
(c) Differentiate between fuzzification and de-fuzzification.
(d) What is informed search ? List the different informed search techniques.

Unit I

- 2.** (a) What is Artificial Neural Networks ? Discuss the various types of learning used in Artificial Neural Networks.

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- (b) What are the advantages of genetic algorithm over conventional search techniques ? Discuss.
3. (a) What are fuzzy sets ? Discuss the properties of fuzzy sets.
(b) What is a Recurrent Neural Network (RNN) ? What are its advantages and limitations ? Discuss.

Unit II

4. (a) What is depth first search with iterative deepening ? What are its merits and demerits over Breadth First Search and Depth First search ? Discuss.
(b) What are rank selection and roulette wheel selection in genetic algorithm ? Discuss using suitable examples.
5. (a) What is hill climbing search ? What is the difference between steepest ascent hill climbing and stochastic hill climbing ? Explain.
(b) What is Breadth First Search ? Write its algorithm and discuss time and space complexities.

Unit III

6. (a) What is First Order predicate Logic ? Differentiate between modus ponen and modus tollen inference rules using suitable examples from FOPL.

- (b) What is a blackboard architecture model ? What are the components in blackboard pattern ? Discuss.
7. (a) What are the differences between declarative frames and procedural frames ? Illustrate.
(b) What is conceptual graphs ? Also explain there characteristics.

Unit IV

8. (a) Write a detailed note on Stanford certainty factor algebra.
(b) What is Learning ? What is the difference between induction and abduction ? Illustrate.
9. (a) What is inductive inference ? What are the rules of inductive learning ? Discuss.
(b) What are the limitations of bi-valued logic in representing uncertainty ? How is it handled in fuzzy logic ? Discuss.