Dec.-22-0221

## CS-504 Artificial Intelligence and Expert System (CSE, IT)
## B.Tech. 5th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

**Note :** Attempt Five questions in all, selecting one question from each Section A, B, C and D. Question no. 9 is compulsory.

### SECTION - A

1. (a) Why is artificial intelligence? Discuss problems which have been solved by artificial intelligence. (5)

   (b) Explain various characteristics of production system in detail. (5)

2. What are various heuristic search techniques used in artificial intelligence? (10)

### SECTION - B

3. (a) What are the various knowledge representation techniques? Explain various characteristics of knowledge representation. (5)

   (b) Write goals and rules of PROLOG also explain anonymous variables. (5)

4. (a) What is first order predicate logic? Explain reasoning in FOPL. (5)

   (b) Describe procedural and declarative meaning in PROLOG. (5)

### SECTION - C

5. (a) Elaborate in detail Hopfield network. (5)

   (b) What is genetic algorithm and explain problem with genetic algorithm. (5)

6. (a) Write a note on Boltzmann machine. (5)

   (b) Differentiate single layer and multilayer neural network. (5)

### SECTION - D

7. (a) Under what conditions would it make sense to use both forward and backward chaining in expert system? (5)

   (b) Explain the phases of natural language processing. (5)

8. (a) What is Expert system? Write characteristics of Expert System. (5)

   (b) What are various Parsing techniques in natural language processing? Discuss it. (5)

### SECTION - E
### (Compulsory Question)

9. Write notes on the following:

   (i) Semantic Analysis

   (ii) Resolution

   (iii) ELIZA

   (iv) Role of knowledge

   (v) Breadth first search (5×4=20)