Full Marks: 30   **Duration: 1:30 hours**

[There are four questions. Answer any three questions. Each question carries equal marks.]

1. (a) What is Artificial Intelligence? Write the importance of AI.   2
   (b) Define knowledge. Describe different kinds of knowledge with example.   4
   (c) Differentiate between propositional and predicate knowledge. Also give an   4
   example of each category.

2. (a) Illustrate the basic architecture of rule-based expert system.   4
   (b) Represent the following inferences in FOPL: 2
       i)   The two persons are siblings.
       ii)   Somebody does not owns a house.
   (c) What will be the output of the following LISP expressions: 4
           i)   (car '(first 2 third))
           ii)   (cdr '(first 2 third))
           iii)   (setq x(* 3 5))
           iv)   (setq x'(* 3 5))
           v)   (member `b `(a b d))
           vi)   (rest (car '(Iami deepti mou)))

3. (a) Explain Frame-based knowledge representation with example.   3.5
   (b) Illustrate Semantic Networks with example.   3
   (c) Explain the level of knowledge? Show with example a parse tree for an English   3.5
   sentence.

4. (a) Mention the applications of fuzzy logic.   2
   (b) Explain fuzzy linguistic variables. Distinguish between fuzzy rule and   3
   Boolean rule.
   (c) Describe the basic components of a fuzzy system.   5