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**B. Tech. (Sem. – 6<sup>th</sup>)****EXPERT SYSTEM****SUBJECT CODE : IT – 312 (Elective – I)****Paper ID : [A0524]****Time : 03 Hours****Maximum Marks : 60****Instruction to Candidates:**

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

**Section – A****(10 × 2 = 20)**

- Q1)** a) What are the characteristics of an Expert System and different problem areas addressed by it?
- b) Write a note on the General Learning Model.
- c) Differentiate between Semantic Networks and Logic frames.
- d) Write a note on Property inheritance.
- e) Make a semantic network for the statement, “Mary gave a green flowered vase to her favorite cousin”.
- f) What is skolemization?
- g) Compare and contrast Forward chaining and Backward chaining with examples.
- h) What were the limitations of Propositional Logic which led to First Order Predicate Logic?
- i) What is a Resolution Principle?
- j) Given formula S1 and S2 below. Show that Q (a) is the logical consequence of the two:

$$S1: (\forall x)(P(x) \rightarrow Q(x))$$

$$S2: P(a)$$

**Section – B****(4 × 5 = 20)**

- Q2)** Explain the development process of an Expert system.
- Q3)** What is Knowledge Elicitation? Explain the advantages and disadvantages of various methods of Knowledge Elicitation.
- Q4)** Explain the architecture of a Real Time Expert System.
- Q5)** Write a note on Mycin Expert System.
- Q6)** What are conceptual dependencies? Make conceptual Dependencies of the following statements.

- a) I heard a frog in the woods.
- b) John ate ice cream with a spoon.

**Section – C****(2 × 10 = 20)**

- Q7)** How is fuzzy logic implemented in case of uncertainty? Write a note on Fuzzy Expert System and explain the Fuzzy inference Process with example.
- Q8)** What is meant by knowledge representation using a Script. Make a Script for the scenario of “Robbing a bank”.
- Q9)** a) Convert the following statements into FOPL.
- i) People only try to assassinate rulers they are not loyal to.
  - ii) Everyone is loyal to someone.
- b) Write a note on the various tools for making an Expert system.

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