Varendra University
Department of Computer Science and Engineering
10th Semester (7th Batch) Final Examination (Fall-2017)
Course Code: **CSE 413**
Course Title: **Artificial Intelligence**

Time: **2 hours**   Marks: **40**

(Answer any four of the following questions)

The figures in the right margin indicate full marks for the respective question.

All part of each question must be answered sequentially

1. a) Define knowledge. What are the differences between declarative and procedural knowledge?   **3**

   b) How can you represent knowledge into memory of a machine to provide intelligence?   **3**

   c) What if FOPL? What are the advantages of FOPL for knowledge representation and processing? Write with a suitable example.   **4**

2. a) Define modus ponens and chain rule for inferring with examples.   **3**

   b) Explain briefly the syntaxes of FOPL.   **3**

   c) Translate the following sentences into FOPL   **4**
   - P1. Every gardener likes the sun
   - P2. You can fool some of the people all of the time
   - P3. You can fool all of the people some of the time
   - P4. All purple mushrooms are poisonous

3. a) What is anonymous variable? What are the advantages of it and how can you use it in Prolog? Write with example.   **3**

   b) What is rule in Prolog? How can you implement it? Write with a suitable example.   **3**

   c) What will be the output of the following Prolog program by considering the following Goal: **4**

   symptom(Disease, mild_body_ache) and symptom(Disease, runny_nose)

   ```
   domains
       disease, indication = symbol
   predicates
       symptom(disease, indication)
   clauses
       symptom(chicken_pox, high_fever).
       symptom(chilcken_pox, chills).
       symptom(flu, chills).
       symptom(cold, mild_body_ache).
       symptom(flu, severe_body_ache).
       symptom(cold, runny_nose).
       symptom(flu, runny_nose).
       symptom(flu, moderate_cough).
   ```

   Disease = cold

4. a) Define fuzzy logic. Is there any difference between fuzzy logic and probability? If so, What are those?   **2**

b) What is fuzzy set? How can you represent it? Explain with example. 3

c) Write some commercial applications of fuzzy logic. 2

d) What is fuzzy control system? Explain with figure. 3

5. Suppose you are working in an organization where intelligent devices are produced. The 10 authority has assigned you a job to design a room cooler by using Fuzzy Logic Controller (FLC). For this design, you can consider two inputs. One of the current room temperature and another is the humidity of the room. By taking these two inputs you have to maintain a Cool_knob of the room cooler so that all of the process will be controlled automatically. Write the process to design the FLC step by step with necessary diagram.

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