B. E. Seventh Semester (Computer Technology) / SoE – 2014-15 Examination

Course Code : CT 1451 / CT 410　　　　　　**Course Name : Artificial Intelligence**

Time : 3 Hours]　　　　　　　　　　　　　　　　　　　[Max. Marks : 60

Instructions to Candidates :—
   (1)   All questions are compulsory.
   (2)   All questions carry marks as indicated.
   (3)   Due credit will be given to neatness and adequate dimensions.
   (4)   Illustrate your answers wherever necessary with the help of neat sketches.

1.   (a)   (i)   Discuss the task domain of AI system.　　　　　　4 (CO 1)

         (ii)   Elaborate control strategies in detail.　　　　　　4 (CO 1)

         (iii)   What are intelligent agents ?　　　　　　　　　2 (CO 1)

OR

   (b)   (i)   You are given two jugs, a 4 litre one and a 3 litre one, a pump which has unlimited water which you can use to fill the jug and the ground on which water may be poured Neither jug has any measure marking on it. How can you get exactly 2 litres of water in the 4 litre jug ?　　　4 (CO 1)

         (ii)   What is production system ? What are its components ?
　　　　　　　　　　　　　　　　　　　　　　4 (CO 1)

         (iii)   What is Turing Test ?　　　　　　　　　　2 (CO 1)

2.   (a)   (i)   Compare depth first and breadth first search with respect to Time Complexity, Completeness and quality of solution.　　4 (CO 2)

         (ii)   How Best First search works ?　　　　　　　4 (CO 2)

         (iii)   Explain heuristic function $h|n|$.　　　　　　2 (CO 2)

OR

(b) (i) Discuss working of steepest Gradient Ascent hill climbing in detail.
4 (CO 2)

(ii) Solve the given blocks world domain. What can be the heuristic function for the given problem ?

4 (CO 2)
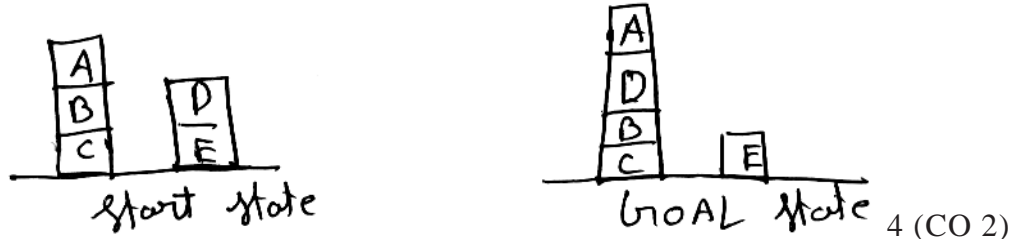
(iii) Compare procedural vs declarative knowledge. 2 (CO 2)

3. (a) (i) Represent the following statements using predicate logic :—

(a) Every child loves every candy.

(b) Any one who loves same candy is not a nutrition fanatic.

(c) Any one who eats a pumpkin is not a nutrition.

(d) Any one who buys any pumpkins either grows it or eats it. 4 (CO 3)

(ii) Convert the predicate logic obtained in (i) to clause form.
4 (CO 3)

(iii) What are the approaches of knowledge representation.
2 (CO 3)

OR

(b) (i) Explain unification algorithm. 4 (CO 3)

(ii) Draw the resolution graph for the following statement and prove that "You will enjoy".

(i) It is a Sunny and Warm day you will enjoy.

(ii) If it is raining you will get wet.

(iii) It is a warm day.

(iv) It is raining.

(v) It is sunny. 4 (CO 3)

(iii) What are the approaches of knowledge representations ? What is representational adequacy and inferrential efficiency ?

2 (CO 3)

4. (a) (i) Compare Forward Vs. Backward reasoning. 4 (CO 3)

(ii) Write PROLOG script for : Sibling, Parent. 4 (CO 3)

(iii) Describe characteristics of PROLOG. 2 (CO 3)

OR

(b) (i) What is Semantic Network ? 2 (CO 3)

(ii) What are the two types of semantic Network ? Draw the simple semantic network for the following statements :

(a) Mammals has hair.

(b) Human is a mammal.

(c) Elephant is of gray color. 4 (CO 3)

(iii) Describe characteristics of Logic programming. 4 (CO 3)

5. (a) (i) What are the different types of reasoning ? 4 (CO 4)

(ii) Explain in brief how Baye's theorem can be used for uncertainty handling in AI problem. 4 (CO 4)

(iii) Explain conditional probability. 2 (CO 4)

OR

(b) (i) Draw and explain the architecture of rule based expert system.

4 (CO 4)

(ii) Write the conceptual dependency for the statement given below :

"Mary eat noodles with a fork" 4 (CO 4)

(iii) Explain Slots. 2 (CO 4)

6. (a) (i) Explain the following :—

        (a) Learning.

        (b) Rate Learning.   4 (CO 5)

    (ii) What do you mean by artificial neural network ?   4 (CO 5)

    (iii) Explain various applications of ANN.   2 (CO 5)

OR

    (b) (i) What are the components of Expert system ?   4 (CO 5)

    (ii) Discuss Expert system shell.   4 (CO 5)

    (iii) Describe knowledge acquisition system.   2 (CO 5)