CBCS SCHEME

USN | | | | | | | | | |

15CS562

Fifth Semester B.E. Degree Examination, June/July 2018
Artificial Intelligence

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. Explain different characteristics of the AI problem used for analyzing it to choose most appropriate method. **(08 Marks)**

   b. A water jug problem states "you are provided with two jugs, first one with 4-gallon capacity and the second one with 3-gallon capacity. Neither have any measuring markers on it. How can you get exactly 2 gallons of water into 4-gallon jug"?
      i)   Write down the production rules for the above problem.
      ii) Write any one solution to the above problem. **(08 Marks)**

OR

2 a. Explain the Best-First search algorithm with an example. **(06 Marks)**
   b. List various task domains of AI. **(04 Marks)**
   c. Explain how AND-OR graphs are used in problem reduction. **(06 Marks)**

Module-2

3 a. Consider the following set of well formed formulas in predicate logic:
      i)   Man (Marcus)
      ii)   Pompeian (Marcus)
      iii) $\forall x :$ Pomeian (x) $\rightarrow$ Roman (x)
      iv)   Ruler (Caeser)
      v) $\forall x :$ Roman (x) $\rightarrow$ loyalto (x, caeser) v hate (x, caeser)
      vi) $\forall x : y$ loyalto (x, y)
      vii) $\forall x : \forall y$ Man(x) $\wedge$ Ruler (y) $\wedge$ tryassassinate (x, y) $\rightarrow$ loyalto (x, y)
      viii) Tryassassinate (Marcus, Caeser). **(10 Marks)**
      Convert these into clause form and prove that hate (Marcus, caeser) using resolution proof.

   b. What is "Matching" in rule based system? Briefly explain different proposals for matching. **(06 Marks**

OR

4 a. What are properties of good system for the representation of knowledge? Explain different approaches to knowledge representation. **(06 Marks)**
   b. Distinguish forward and backward reasoning explain with example. **(06 Marks)**
   c. List the issues in knowledge representation. **(04 Marks)**

Module-3

5 a. What are key issues which needs to be addressed by non monotonic reasoning system? Explain. **(06 Marks)**
   b. Briefly explain the motivation for fuzzy logic. **(04 Marks)**
   c. Explain how semantic networks are used in representation and reasoning. **(06 Marks)**

OR

6 a. Explain non monotonic logic and default logic with example. Which are the two common kinds of nonmonotonic reasoning defined in these logics? **(06 Marks)**

b. State Baye's theorem. How it is used in statistical reasoning? **(04 Marks)**

c. Write a short note on Frames. **(06 Marks)**

Module-4

7 a. List the components of a script. **(04 Marks)**

b. Explain the MINIMAX algorithm. Consider the following game tree in which static tree are all from the first players point of view. Apply MINIMAX algorithm to decide which move to be chosen (suppose the first player is the maximizing player). **(12 Marks)**
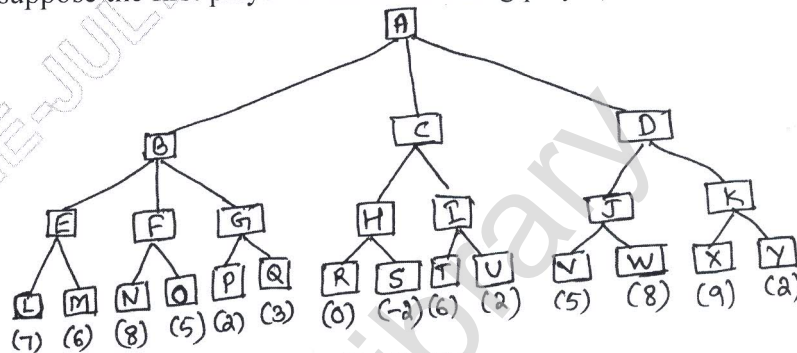

Fig.Q.7(b)

OR

8 a. List the rules of conceptual dependency. **(06 Marks)**

b. Why should we want to build large knowledge bases? **(04 Marks)**

c. Write a note on iterative deepening. **(06 Marks)**

Module-5

9 a. Explain various steps involved in natural language understanding process. **(08 Marks)**

b. Write a note on knowledge acquisition. **(04 Marks)**

c. Explain how decision trees are used in learning? **(04 Marks)**

OR

10 a. Distinguish between semantic grammars and case grammars with examples. **(06 Marks)**

b. Explain the process of the learning from examples. **(06 Marks)**

c. What capabilities are expected from expert systems? **(04 Marks)**

* * * * *