Paper / Subject Code: 42603 / Intelligent System

(3 Hours)   [Total Marks : 80]

N.B : (1) **Question 1** is compulsory.
      (2) Out of remaining **ANY 3**
      (3) Assume suitable data wherever required.

1. Solve **ANY FOUR**   (20)
   (a) Define Intelligence, artificial Intelligence, Agent, Rational Agent, and logical Agent
   (b) Features of expert system
   (c) Explain Knowledge base agent.
   (d) Describe the difference and similarities between Problem solving and Planning
   (e) Forward Chaining

2. (a) We have bag of 3 biased coins a,b,c with probability of coming up heads are
20%,60%,80% respectively. One coin is drawn randomly from bag and then coin is flipped 3 times to generate
outcome X1,X2,X3. Draw Bayesian network corresponding to this setup and define necessary conditional
probability table   (10)

(b) Explain why Problem Formulation must follow Goal Formulation & solve water jug problem.
Water Jug Problem: You are given two jugs, a 4-gallon one and a 3-gallon 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
measuring markings on it. How can you get exactly 2 gallons of water in the 4-gallon jug?.   (10)

3. (a) Explain A* algorithm? What is drawback of A*?   (10)
   (b) Explain Supervised and unsupervised learning with example   (10)

4. (a) Explain a partial order planner with an example. give Disadvantages of Partial order planner   (10)
   (b) Give difference between uniformed search and informed search algorithms?   (05)
   (c) List Down all types of Agents. Draw Learning agent block diagram   (05)

5. (a) Explain Hill Climbing its drawbacks and how to overcome its drawback   (10)
   (b) What is Prolog? Give Structure of Prolog program?   (10)
        Write a Prolog Program for family information systems.

Q6: (a) Illustrate the Resolution Proof   (10)
        The law says that it is a crime for an American to sell weapons to hostile nations.
        The country Nono, an enemy of America, has some missiles, and all of its missiles were
        sold to it by Colonel West, who is American.
            (i) Represent the above sentences in first order predicate logic (FOPL).
            (ii) Convert them to clause form.
            (iii) Prove that "Colonel West is a criminal" using resolution technique.
    (b) Explain ALPHA BETA pruning algorithm with example ·   (10)

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