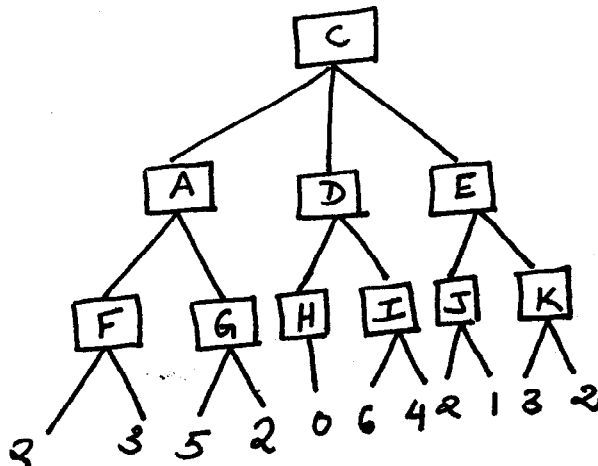**BITS, PILANI - DUBAI CAMPUS**
KNOWLEDGE VILLAGE, DUBAI
IV Year II Semester

Artificial Intelligence   **EAUC 461**   **Comprehensive Exam (Closed Book)**
Duration : 180 Mins   Max marks : 40   Weightage : 40% Date : 28-5-06

1. What is meant by analogy in the process of learning, explain the different types. 3M

2. Explain how the alpha beta pruning will work for the given min-max tree. 3M

3. Explain the working of the Bayesian Network.   3M

4. Discuss about any the working of any two expert systems.   4M

5. Give the working of the Hopfield network, what do you decipher by memory recall in a Network.   3M

6. Represent the following facts using Conceptual Dependency
    a. John ate an egg.
    b. A dog named Emma is brown.   3M

7. Represent the given fact using a semantic net " Tom believes that Jane likes pizza."   3M

8. Write short notes on
    a. Version spaces
    b. Expert system shells
    c. Tangled Hierarchy

P.T.O

    d. Difference between Hill Climbing and Steepest Ascent Hill Climbing.
    e. Frames as a form of representation in weak slot and filler structures
<div align="center">2X 5 = 10M</div>

9.   Represent the following using predicate logic
    a. All people need air
    b. If you do not exercise you will gain weight
    c. All men are mortal
    d. Blond haired people have blue eyes   4X1 = 4M

10. Consider the problem of a farmer ,a wolf, a goat and a bundle of grass required to be transported across a river.The farmer can take only one item at a time and at a given point of time the wolf and goat cannot be left together and also the goat and grass cannot be left together.Show a possible solution for the given problem and also show the production rules.   4M

**************************ALL THE BEST ******************************

Artificial Intelligence   EAUC 461   Test 2(Open Book)

Duration : 50 Mins   Max marks : 20   Weightage : 20% Date : 7-5-06

---

1. Why are Neural Networks classified as connectionist systems   2M
2. With respect to neural networks explain the following terms
   a) Classification
   b) Pattern Recognition
   c) Memory Recall
   d) Prediction   2M

3. Explain the need for multilayer perceptrons, how are they different from single layer perceptrons.   2M
4. Differentiate between back propogation and competitive learning. 2M
5. Give the output of the following LISP functions
   a) (> (* 5 6) (+ 4 3))
   b) (* (+ 2 5) (-7 (/ 21 7)))
   c) (list '(+ 1 2) '(+ 3 4))   1.5M

6. Define a LISP function to find the absolute value of a term X.   1.5M
7. Initially, I look out of the window and look at the clouds on the horizon. I conclude that I believe there is a 0.6 chance of rain. Half an hour later I make the same observation and now believe there is a 0.4 chance of rain.

a) What are my initial disbelief and certainty factors that it will rain?

b)What are the new estimates of belief, disbelief and certainty factors   2M
based on both observations.

8. Represent the following facts
   a) Every parent loves their child
   b) Andrew believes that the earth is flat   4M

9. Use a script for representing admission to a college.   3M

******************GOOD LUCK*************************************

Artificial Intelligence   **EAUC 461**   **QUIZ(Closed Book)**

Duration : 20 Mins   Max marks : 10   Weightage : 10%   Date : 12-04-06

Name :   **ID No :**

A

1. Represent the following statements using Conceptual Dependency. 2M
    a.   Dave is a lecturer

    b.   The tailor cut the cloth with the scissor

2. Represent the following statement using a semantic net 1M
        Mike and Mary's telephone number is the same

3. Represent the following statement using partitioned net 1M
   All players like the referee

4. Give a semantic net representation of fly(Shankar, New York, New Delhi, yesterday)   1M

5. Explain the terms with reference to frames 1M
   a. mutually disjoint

   b. instance of

6. Give a LISP function to get the 3rd element of a list   0.5M

7. Give a LISP function to add two numbers using +   0.5M

8. Give the output of the following expressions   3M
    a. (LIST(CDR'(AB)) 'C)

    b. (CDR '(( ) ( )))

    c. (EQ NIL ( ))

    d. (LIST '(P) '((XY))'A)

    e. APPEND '((XY)) '((X)Y)

    f. COND ((NULL 'A) 'A) (T 'B))

Artificial Intelligence   EAUC 461   Test 1(Closed Book)

Duration : 50 Mins   Max marks : 20   Weightage : 20% Date : 19-3-06

1. Discuss about three issues involved in knowledge representation. 3M

2. Discuss the hill climbing technique and list the different categories found. 3M

3. Give an example for which breadth first search is better than depth first search and an example for which depth first search is better than breadth first search. 2M

4. What is an AI technique? How would you differentiate between a good AI technique and a bad AI technique? 3M

5. Differentiate between AND graphs and OR graphs. 2M

6. Convert the following statements to Well Formed Formulas
    a) If it doesn't rain on Monday, Tom will go to the mountains.
    b) Emma is a Doberman, pinscher and a good dog.
    c) Some people like mushrooms
    d) If wishes were horses, beggars would ride.
    e) Nobody likes taxes
    f) If a dog is a good dog and has a master than he will be with his master.
                                                                                6M

7. Convert the following to the CNF form

$$((P \rightarrow Q) \wedge (Q \rightarrow R)) \rightarrow (P \rightarrow R)$$ 2M

****