

FACULTY OF ENGINEERING

B.E. 4/4 (CSE) I-Semester (Main) Examination, November / December 2012

Subject : Artificial Intelligence

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. Define a state with help of an example. (3)
2. What is the difference between uniformed search and informed search? (2)
3. Express the following statement in predicate logic: (2)
"Bachan is a student of Osmania University"
4. Convert the following expression into clausal form: (3)
 $(\forall x(\exists y(\text{person}(x) \rightarrow (\text{eats}(x,y) \wedge \text{IceCream}(y))))))$
5. State Baye's theorem. (3)
6. What is the frame problem in planning? (2)
7. Define version space. (2)
8. Can we implement an OR function using a perceptron? Justify your answer. (3)
9. Name any two speech acts. (2)
10. What is a phoneme? Give an example. (3)

PART – B (5x10=50 Marks)

- 11.(a) Discuss any two applications of artificial intelligence. (5)
- (b) Consider the game tree given in figure 2, in which the root corresponds to a MAX node and the values of a static evaluation function, if applied, are given at the leaves.

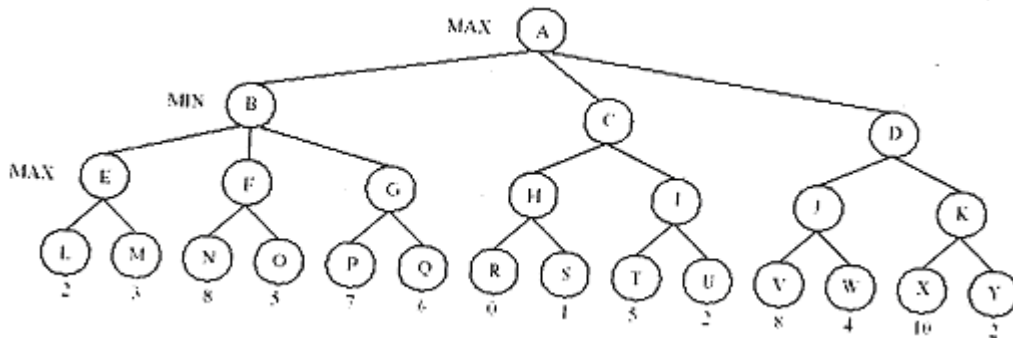


Fig.2 Game Tree

What is the minimax value computed at the root node for this tree? What move should MAX choose? Show all intermediate values at each node as they get updated. (5)

- 12.(a) Differentiate between forward chaining and backward chaining. (4)

(b) Given

$$\begin{aligned} &\sim A \\ \sim A &\Rightarrow \sim B \wedge \sim C \\ \sim B &\Rightarrow \sim D \wedge \sim E \\ \sim C &\Rightarrow D \vee E \vee F \end{aligned}$$

Prove by resolution refutation the fact F (show all the steps to get full credit) (6)

..2..

13.(a) What is Sussman's anomaly? Explain. (5)

(b) Explain the different lists used in defining the operators in STRIPS, with the help of an example. (5)

14.(a) Define entropy. (2)

(b) Assume a domain with three attributes A, B, and C. Each attribute has two possible values T and F. Given below is a set of instances.

A	B	C	Target
T	T	T	Yes
T	T	F	No
T	F	T	Yes
F	T	T	Yes
F	T	F	No
F	F	F	Yes

Calculate the information gain for the attributes A, B and C. Which attribute would be selected by the standard ID3 algorithm. (8)

15.(a) Write a context free grammar and show a parse tree to correctly parse the sentence. (6)

The cat sat on the mat.

(b) Discuss briefly about signal processing. (4)

16.(a) What are the various knowledge representation techniques used in expert system? (5)

(b) What is a Bayes Network? Explain with an example. (5)

17. Write short notes on the following: (10)

(a) Agents

(b) Perceptron
