

(CS 326)

III/IV B.Tech. DEGREE EXAMINATION,  
OCTOBER 2005.  
Second Semester

ARTIFICIAL INTELLIGENCE

Time : Three hours                      Maximum : 70 marks

All questions carry equal marks.

Answer Question No. 1 compulsorily.

(1 × 14 = 14)

Answer ONE question from each Unit.

(4 × 14 = 56)

1. Briefly explain the following :
  - (a) What do you mean by state space search?
  - (b) What does a production system consists of?
  - (c) What is a heuristic function?
  - (d) What is hill climbing?
  - (e) What is the difference between forward and backward reasoning?
  - (f) What is a compactable functions?
  - (g) Give an example for control knowledge.

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(h) Represent the following statement using semantic net. "A man is an human being and all human beings have two legs".

- (i) What are rules?
- (j) What is the art?
- (k) 'Fail' predicate in PROLOG.
- (l) Define a script.
- (m) List the basic prolog I/O predicates.

(n) What are the approaches to knowledge representation?

#### UNIT I

2. (a) Briefly discuss the representation of the problem in a state space.

(b) Enumerate the advantages of DFS and BFS algorithms.

Or

(c) Describe the A\* algorithm with suitable example.

(d) Trace the constraint satisfaction procedure solving the following crypt arithmetic problem :

$$\begin{array}{r} \text{CROSS} \\ + \text{ROADS} \\ \hline \text{DANGER} \end{array}$$

## UNIT II

3. (a) Discuss about representation of simple facts in logic.
- (b) Discuss briefly different approaches to knowledge representation.

Or

- (c) What is resolution? Explain with the help of an example.
- (d) What is the need for natural deduction? Explain.

## UNIT III

4. (a) Compare and contrast forward versus backward reasoning.
- (b) Discuss about matching and indexing.

Or

- (c) Briefly explain about semantic nets.
- (d) Construct a script for "going to a restaurant".

UNIT IV

5. (a) Explain rules in PROLOG with suitable examples.
- (b) Write a PROLOG program to find ? member (C, [a, b, c]). Trace the search sequence.

Or

- (c) Explain the concept of recursion in PROLOG with example.
- (d) Explain how objects and relationships are represented by using trees and lists.