

B.Tech VI Sem. (Main/Back) Examination, May, 2012

Computer Engineering

**6CS6.2 ARTIFICIAL INTELLIGENCE**

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks: 24

*Instructions to Candidates:*

*Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*

1. \_\_\_\_\_ Nil \_\_\_\_\_

2. \_\_\_\_\_ Nil \_\_\_\_\_

**Unit-I**

- Q.1 (a) What are the major categories of AI? Explain them briefly. Why AI is a matter of research? [8]
- (b) Enumerate classical "Water Jug Problem". Describe the state space for this problem. Solve this problem by giving its operation sequence. [8]

**OR**

- Q.1 (a) Why AI is related with engineering stream? Justify it with suitable example. What engineering field are related with AI & what are their role in AI? [5]
- (b) Differentiate between the following
- (i) A\* algo and AO\* algo [7]
- (c) Define the 8-Puzzle problem. [4]

## Unit-II

- Q.2 (a) Explain briefly the difference between procedural & declarative knowledge. [5]  
(b) Differentiate between domain dependent knowledge & domain independent knowledge. [5]  
(c) What are KBS independent technologies? Explain in brief. Also write the business benefits of KBS. [6]

## OR

- Q.2 (a) What are the various approaches & issues in knowledge representation? [8]  
(b) Define the following terms:  
(i) Mapping  
(ii) Homomorphic  
(iii) Horn clause  
(iv) Reasoning [8]

## Unit-III

- Q.3 (a) Convert the following statement into predicate logic:  
(i) Horses, cows and pigs are mammals.  
(ii) An offspring of a horse is a horse.  
(iii) Bluchog is a hog.  
(iv) Bluchog is a Charlie parent.  
(v) Offspring & parent are inverse relation. [8]  
(vi) Every mammal has a parent.  
(b) Write short note on:  
(i) Default logic  
(ii) Minimalist reasoning [8]

OR

- Q.3 (a) Explain the algorithm of predicate logic resolution. [8]  
(b) explain the difference between forward & backward reasoning (chaining) & under what condition each would be best to use for. [6]

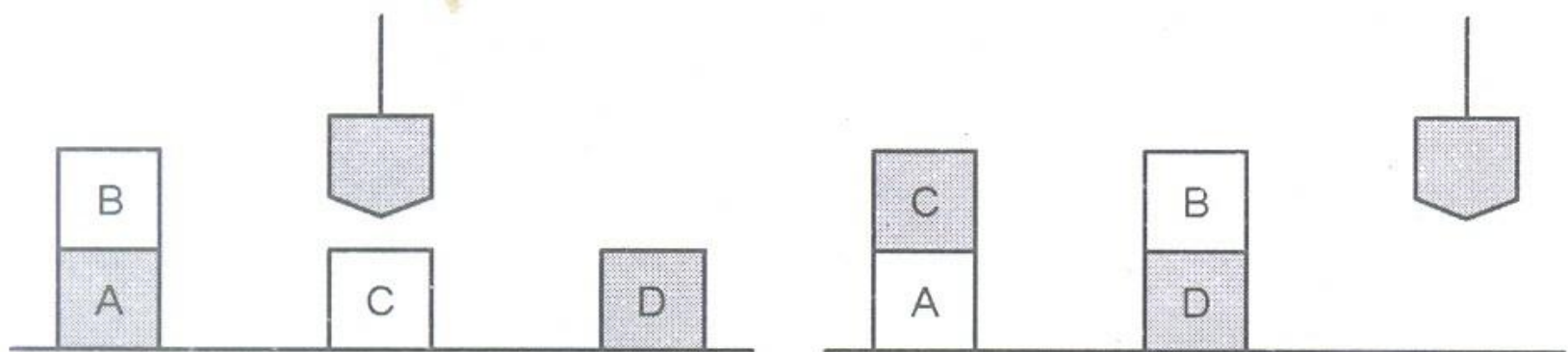
- Sol. (a) Refer chapter 5, section 5.3, page no. 5.11  
(b) Refer chapter 6, section 6.2, page no. 6.3.

Unit-IV

- Q.4 (a) Explain the algorithm of MINMAX search procedure and discuss any two from following:  
(i) Alpha Beta cutoff  
(ii) Secondary search  
(iii) Waiting for quiescences [8]  
(b) What are steps in NLP? List & explain them briefly. [8]

OR

- Q.4 (a) Write note on "hierarchical Planning". [8]  
(b) Consider the following block world problem



Figure

Initial: On (B, A)n  
On table (A)n  
On table (C)n  
On table (D)n

Goal: On table (A)n  
On table (D)n  
On (C, A)n  
On (B, D)

Arm empty

- (i) Show STRIPS would solve` this problem.
- (ii) Show how TWEAKS would solve this problem.

[8]

### Unit-V

Q.5 (a) Discuss following:

- (i) Learning in problem solving
- (ii) Explanation based learning

[10]

(b) Explain the major application areas of neural network.

[6]

### OR

Q.5 (a) Explain the different types of artificial neural network of architecture.

[8]

(b) Write shsort note on:

- (i) DENDRAL
- (ii) MYCIN

[8]

