



Name :

Roll No. :

Invigilator's Signature :

**CS/M.Tech(ECE)/SEM-1/MVLSI-105C/2012-13
2012**

AI & NEURAL NETWORK

Time Allotted : 3 Hours

Full Marks : 70

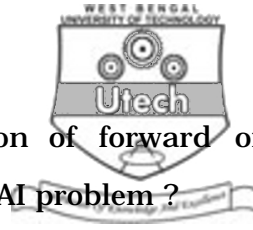
The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

**GROUP – A
(Short Answer Type Questions)**

1. Answer any seven of the following : $7 \times 2 = 14$

- i) List down the characteristics of intelligent agent.
- ii) What do you mean by heuristic function ?
- iii) Give the PEAS description of an interactive English tutor system.
- iv) What are the seven processes involved in a communication episode ?
- v) How TELL and ASK are used in first-order logic ?
- vi) Give the semantic representation of “John loves Mary”.
- vii) Define constraint satisfaction problem.



- viii) What factor determines the selection of forward or backward reasoning approach for an AI problem ?
- ix) Draw the basic model of an artificial neuron.
- x) Write down the elements of an artificial neuron.
- xi) Define learning.

GROUP - B

(Long Answer Type Questions)

Answer any *four* of the following. $4 \times 14 = 56$

- 2. Explain the backward chaining and forward chaining with example. $6 + 8$
- 3. Consider the following sentences :
 - John likes all kinds of food.
 - Apples are food.
 - Chicken is food.
 - Anything anyone isn't killed by is food.
 - Bill eats peanuts and is still alive.
 - Sue eats everything Bill eats.
 - a) Translate these sentences into formulas in predicate logic.
 - b) Prove that John likes peanuts using backward chaining.
 - c) Prove that John likes peanuts using resolution. $4 + 4 + 6$



4. a) What are the four basic steps of agent program in any Intelligent System ?
b) Explain uniformed search strategies with example.
c) List the canonical forms of resolution. $4 + 5 + 5$
5. a) Explain different types of network architectures.
b) What is feed forward neural network ?
c) Derive the expression for generalised delta learning rule.
d) Explain error-correction learning. $5 + 2 + 3 + 4$
6. a) Explain the concept of supervised learning, unsupervised learning and reinforcement learning.
b) Write down any four basic tasks of learning.
c) Explain back propagation learning algorithm.
d) Discuss its limitations. $6 + 2 + 4 + 2$
7. a) What do you understand by content addressable memory ?
b) In this context explain the concept of Hopfield model. $4 + 10$
8. Write a PROLOG program for the following :
- a) To add the numbers in an array.
- OR*
- b) To find the greatest number in an array.
-