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 × 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 × 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.