

GANPAT UNIVERSITY

M.TECH SEMESTER: I (COMPUTER ENGINEERING/ INFORMATION TECHNOLOGY)

REGULAR EXAMINATION Nov – Dec 2015

3CE102/3IT102: COMPUTATIONAL INTELLIGENCE

[Total Marks: 60]

Time: 3 Hours]

- Instruction:**
- 1 Assume suitable data if required.
 - 2 Figures to right side indicate full marks.
 - 3 Each section should be written in a separate answer book.
 - 4 Be precise and to the point in your answer.

Section - I

- Que. – 1** [A] To build a system for solving any problem which four things are necessary? [4]
 [B] Discuss control strategies for taking the decision to find the goal state with suitable example. [6]

OR

- Que. – 1** [A] Discuss how breadth first search is not better than depth first search with example. [4]
 [B] Write an algorithm for simple hill climbing. Explain it with 8-puzzle problem. [6]

- Que. – 2** [A] Describe the problem characteristics. [5]
 [B] Write an algorithm for steepest ascent hill climbing. Explain it with tic-tac-toe problem. [5]

OR

- Que. – 2** [A] You are given two jugs of water, 4-litre and 3-litre. Neither has any measuring mark on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2-litre of water into the 4-litre jug? Solve and suggest the appropriate strategy for the given water-jug problem. [7]
 [B] Explain open and closed list in best first search. [3]

- Que. – 3** [A] When hill climbing will be fail. Which are solutions to overcome those problems? Discuss it with block world problem. [6]
 [B] Discuss when h' overestimates and underestimates h with suitable example. [4]

Section – II

Que. – 4 [A] What is constraint satisfaction? Solve following cryptarithmic problem. [7]

D O N A L D
+ G E R A L D

R O B E R T

[B] What is computational intelligence? List out the applications of it. [3]

OR

Que. – 4 [A] Prove fuzzy Demorgan's law: $(A \cap B) = (A^c \cup B^c)^c$ [4]

[B] Explain artificial neural network. Compare Artificial neural network with biological neural network. [6]

Que. – 5 [A] What is resolution? Assume the following facts. [6]

1. Steve only likes easy courses.
2. Science courses are hard.
3. All the courses in the basket weaving department are easy.
4. BK301 is a basket weaving course.

Use resolution to answer the question, What course would Steve like”.

[B] Develop a perceptron up to epoch 2 for given pattern for AND function. [4]
(given data: $w_1=w_2=b=0, \alpha=0.5$)

Input			Target
X1	X2	b	t
1	1	1	1
-1	1	1	-1
1	-1	1	-1
1	-1	1	-1

OR

Que. – 5 [A] Answer the question using resolution, “Did Marcus hate Caesar?” [6]

1. Marcus was a man.
2. Marcus was a Pompeian.
3. All Pompeians were Romans.
4. Caesar was a Ruler.
5. All Romans were either loyal to Caesar or hated him.
6. Everyone is loyal to someone.
7. People only try to assassinate rulers they are not loyal to.
8. Marcus tried to assassinate Caesar.

[B] Write an algorithm for adaline network. [4]

Que. – 6 [A] Explain Minimax search procedure and also discuss alpha-beta cutoffs with suitable example. [6]

[B] Explain neural network architecture. [4]

END OF PAPER