Student Exam No._____

GANPAT UNIVERSITY

B.TECH SEMESTER: VII (COMPUTER ENGINEERING/ INFORMATION TECHNOLOGY)

REGULAR EXAMINATION NOV-DEC 2016

2CE703/2IT703: ARTIFICIAL INTELLIGENCE

Time: 3 Hours **Total Marks: 70**

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]** When hill climbing will be fail? What are the solutions to overcome those problems? Explain it with block world problem. **[6]**

[B] Explain problem characteristics for 8-puzzle problem. **[4]**

[C] What is OPEN and CLOSED list? Explain it with proper example. **[2]**

OR

Que. – 1 **[A]** You are given two jugs of water having capacity of 16-gallon and 7-gallon respectively. There is a pump that can be used to fill the water in the jugs. There is no any measuring mark on it. You have to obtain exact 8-gallon of water in 16-gallon jug. Solve and suggest the appropriate strategy for given water-jug problem. Also write the possible rules to solve the water jug problem. **[6]**

[B] Discuss Travelling Salesman problem using heuristic technique. Compare it with branch and bound technique. **[4]**

[C] List out any five applications of AI and discuss any two of them. **[2]**

Que. – 2 **[A]** Explain Breadth First Search and Depth First Search for Tic-tac-toe game with advantages and disadvantages of its. **[6]**

[B] Write a program to find the square root of given number (Assume your number is square) using prolog. **[3]**

[C] Write Simple Hill Climbing Algorithm. Discuss it with suitable example. **[2]**

OR

Que. – 2 **[A]** What is problem Reduction? Explain it with matric multiplication example. **[5]**

[B] Write a program to display elements from specified index to the end of a list using prolog. **[3]**

[C] Explain Ignorable, recoverable and irrecoverable problem with example. **[3]**

Que. – 3 **[A]** Define following terms: **[3]**

i. Heuristic Search
ii. State Space Search
iii. Combinatorial Explosion

[B] Explain Means-Ends Analysis. Also write an algorithm of it. [3]

[C] What is constraint satisfaction? Solve following Cryptarithmetic problem. [6]

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  C R O S S
+ R O A D S
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D A N G E R
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Section - II

Que. –4 [A] Explain resolution in propositional and predicate logic. [6]

[B] Describe Bayes' Theorem. List out its applications. [6]

OR

Que. – 4 [A] Consider the following axioms: [6]

i. All hounds howl at night.

ii. Anyone who has any cats will not have any mice.

iii. Light sleepers do not have anything which howls at night.

iv. John has either a cat or a hound.

v. (conclusion) If John is a light sleeper, then John does not have any mice.

Prove conclusion using resolution.

[B] Explain knowledge based system architecture. [6]

Que. – 5 [A] Discuss biological neural network and compare it with artificial neural network. [6]

[B] Prove fuzzy Demorgan's law: $(A \cap B) = (A^c \cup B^c)^c$ [3]

[C] Explain frame with example. [2]

OR

Que. – 5 [A] Discuss types of artificial neural network architecture with diagram. [6]

[B] Solve following using Fit-Violation Theorem. [3]

	X1	X2	X3	X4	X5
A	0.2	0.6	0.7	0.9	0
B	0.3	0.5	0.2	0.8	1

[C] Differentiate monotonic and non-monotonic reasoning. [2]

Que. – 6 [A] Draw Partitioned Semantic Net: [6]

i. Andrew believes that the earth is flat.

ii. Every parent loves their child.

[B] Explain Mini-Max Search Procedure and also discuss alpha-beta cutoff. [6]

END OF PAPER