Code No: **R4205A** **R10** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April– 2015

ARTIFICIAL INTELLIGENCE

(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1 Explain about Tic-Tac-Toe game problem by assuming one player is X the other one can be either human or a computer by taking 3X3 grid space. [15]

2 a) Discuss A* algorithm in detail. [8]

b) Solve the water-jug problem by writing the production rules. [7]

3 a) Explain the inference rules for quantifiers. [8]

b) Explain the syntax and semantics of propositional logic. [7]

4 a) Draw the semantic network representing the following Knowledge.
Every living thing needs oxygen to live. Every human is a living thing. John is human. Answer john is living thing john needs oxygen to live [8]

b) Briefly explain about the conceptual dependency. [7]

5 a) What is Inference Engine? Describe Backward and Forward chaining mechanism used by an inference engine? [8]

b) How is an expert system different from a traditional program? [7]

6 a) Write a short note on Bayesian networks? [8]

b) Explain the following. i) Alpha cut ii) Linguistic Variables [7]

7 a) What is machine learning? Differentiate between supervised learning and unsupervised learning. [8]

b) Describe case based reasoning and learning. [7]

8 a) Explain Multi layer perceptron(MLP) with back propagation with schematic block diagram. [8]

b) Design perceptrons for AND and NOT boolean functions. [7]

Code No: **R4205A** **R10** **Set No. 2**

IV B.Tech II Semester Regular/Supplementary Examinations, April– 2015

ARTIFICIAL INTELLIGENCE

(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

*****

1 a) Explain in detail the applications of Artificial Intelligence. [8]

b) Discuss categorization of intelligent systems. [7]

2 a) Search in game playing programs always proceeds forward from current state to goal state. Why? Explain. [7]

b) Explain the problem characteristics. [8]

3 a) Explain the forward-chaining algorithm for propositional logic. [7]

b) Consider the following problem.

- John likes all kinds of food.
- Apples are food.
- Chicken is food.
- Anything any one eats and isn't killed by is food.
- Bill ate peanuts and still alive.
- Sue eats everything Bill eats.

i) Convert the formulas into clause form.

ii) Prove that "John likes peanuts" using resolution. [8]

4 a) Explain about Extended semantic networks for KR. [7]

b) Develop a frame based system for university application. [8]

5 a) Explain the phases in building expert system. [8]

b) Briefly explain the architecture of expert systems. [7]

6 a) Give different types of fuzzy membership functions and explain. [8]

b) Compare Fuzzy logic with traditional logic. [7]

7 a) What is clustering? Describe main algorithms used for clustering. [8]

b) What is machine learning? Explain about inductive and deductive learning. [7]

8 a) What is artificial neural network? Differentiate between single layer feed forward neural network and multi layer feed forward neural network. [8]

b) Explain back propagation algorithm with example. [7]

Code No: **R4205A** **R10** **Set No. 3**

IV B.Tech II Semester Regular/Supplementary Examinations, April– 2015

ARTIFICIAL INTELLIGENCE

(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1 a) What is an AI technique? Explain briefly. [8]

b) Write about some of the cross domains of Artificial intelligence. [7]

2 Solve the following crypt arithmetic puzzle. Write constraint equations and find one solution using DFS by showing the steps involved in finding the solution.

```
    B A S E
+   B A L L
------------
  G A M E S
------------
```

[15]

3 a) How can resolution be used to show that a sentence is valid or Unsatisfiable? [8]

b) Compare inference in propositional logic with inference in first order logic. [7]

4 a) Develop a complete frame based system for hospital application. [8]

b) Explain about the rules for conceptual dependencies. [7]

5 a) Give two examples of non-monotonic system. Consider some monotonic and non monatomic applications and show how you can solve them using truth monotonic system. [8]

b) Explain the Applications of the Expert systems. [7]

6 a) Explain Fuzzy set operations with suitable Examples. [8]

b) Explain about certainty factor theory. [7]

7 a) Discuss supervised learning algorithms in detail. [8]

b) What is the difference between neural network based learning and support vector machine. [7]

8 a) Describe the mathematical model of perceptron with example. [8]

b) What is learning? Explain learning in neural networks. [7]

Code No: **R4205A** **R10** **Set No. 4**

IV B.Tech II Semester Regular/Supplementary Examinations, April– 2015

ARTIFICIAL INTELLIGENCE

(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1	a)	Explain the current trends in AI.	[8]
	b)	Briefly Explain the history of Artificial Intelligence.	[7]
2	a)	Explain about hill climbing heuristic search technique.	[8]
	b)	Discuss in detail about alpha-beta pruning.	[7]
3		Decide whether each of following sentence is valid, unsatisfibale or neither. Verify your decisions using truth tables or equivalence rules a) Big V Dumb V (Big => Dumb) b) (Big Λ Dumb) V ¬Dumb c) (A Λ B) V (B Λ C)	[15]
4	a)	What is meant by Script? Write a script for Restaurant Problem.	[8]
	b)	Illustrate the Forward Reasoning Inference Method by using some Example.	[7]
5	a)	Explain about MYCIN Expert system in detail.	[8]
	b)	Explain the Issues in black board systems for problem solving.	[7]
6	a)	Discuss Multi valued logic in detail.	[8]
	b)	Explain fuzzy expert systems with example.	[7]
7	a)	Discuss Support vector machine in detail.	[8]
	b)	Why is the use of Nearest Neighbor classifiers problematic in high dimensional input spaces.	[7]
8	a)	Discuss design issues of artificial neural networks.	[8]
	b)	Explain the architecture of artificial neural network with suitable example.	[7]