CHAPTER 1

INTRODUCTION TO AI

1. Define artificial intelligence. Describe the fields and application areas of AI.
2. What is Turing Test? What are the capabilities a machine needs to have to pass the Turing Test? Explain.
3. An agent consists of architecture and an agent program. Sketch the basic architecture of an intelligent agent. Give an example of an agent.
4. Is it possible to develop human level intelligence in a machine? What could be the challenges of such research?
5. Describe Turing Test. Do you think the test is an accurate measure of artificial intelligence? Explain.
6. Define and describe the difference between knowledge, belief, hypothesis and data.
7. Briefly explain with example: a) Declarative knowledge, b) Procedural Knowledge and c) Heuristic knowledge.
8. Write short notes on:
9. “A dumb machine can be converted into an intelligent machine and that machine can behave as human”. Do you agree on this statement? If yes, why, otherwise justify. [2006
10. Write short notes on:
    1. Relational and procedural knowledge
    2. Human versus machine performance
    3. Turing Test

CHAPTER 2

PROBLEM SOLVING

1. Model the water-jug problem, Missionary cannibal, Farmer Fox Goose Grain Problem as an AI production system.
2. Differences between Linear Planning vs Non-Linear Planning
3. Compare Forward and Backward Chaining
4. Means End Analysis (MEA) with example
5. Short note on MYCIN.

CHAPTER 3

INTELLIGENCE

1. What is Intelligence? Difference between Human Intelligence and Machine Intelligence

CHAPTER 4

KNOWLEDGE REPRESENTATION

* What is Knowledge Representation and FOPL/FOL?
* Advantages of FOPL over Proposition Logic with examples
* Convert into CNF and Proof by Resolution (Practice class questions)
* Semantic Network and Frames for Knowledge Representation
* Skolemization and CNF Conversion Steps

CHAPTER 5

INFERENCE AND REASONING

* Heuristic Search A\* Search and Greedy Search differences with one example
* Mini-Max Algorithm, it’s limitations and how to overcome them by Alpha Beta pruning
* What is Uncertainity and Bayes Theorem? Example of Bayes Belief Network
* Short note on Case Based Reasoning

CHAPTER 5

MACHINE LEARNING

* What is Neural Network and Perceptron? Explain its working.
* Genetic Algorithm and its steps. Explain working with an example.
* Short notes on GA Operators
* Maximize equations using GA Algorithm. ( Check class notes and question banks for the questions)

CHAPTER 6

APPLICATIONS OF AI

* Back-propagation Neural Network
* Multilayer Perceptron preferred over Single layer. Why?
* Expert System and its characteristics.
* Architecture of Expert System
* What is NLP? Explain steps involved in NLP.
* What are the various ambiguities in NLP.
* Draw a parse tree for a sentence. (Examples in class notes or the attached reference notes)