

B. Tech. (CSE) (Semester – 7th)
ARTIFICIAL INTELLIGENCE
Subject Code: BCSED1724
Paper ID: [18111146]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a) What is an intelligent agent in AI?
- b) What is the purpose of alpha-beta pruning in game playing algorithms?
- c) Define propositional logic in the context of AI.
- d) What is the difference between declarative and procedural knowledge representation?
- e) What is Bayes' Rule in probability theory?
- e) Write a short note on rule based systems.
- f) What is the difference between supervised and unsupervised learning?
- g) Define reinforcement learning in the context of AI.
- h) Define the concept of a problem space in AI problem-solving.
- i) Differentiate between propositional logic and predicate logic in AI?
- j) What is the role of Prolog in AI programming?

Section – B

(5 marks each)

- Q2. Describe the Minimax search procedure. How is it used in decision-making for game playing AI?
- Q3. Describe the approaches and key issues in knowledge representation in AI systems.
- Q4. Explain the concept of certainty factors and how they are used in rule-based systems for reasoning under uncertainty.
- Q5. Describe the decision tree learning algorithm.
- Q6. Explain how fuzzy logic is implemented to handle uncertainty in AI systems. Provide an example of its application in decision-making.

Section – C

(10 marks each)

- Q7. Differentiate between Best-first search, Iterative deepening A* (IDA), and Small memory A* (SMA) heuristic search techniques. How do they differ in terms of efficiency and memory usage?
- Q8. Differentiate between bayesian networks and fuzzy logic as approaches to reasoning under uncertainty.
- Q9. Explain the concept of natural language processing (NLP) and the role of formal grammar and parsing in understanding and generating human language.