

Code No: **R204105N**

**R20**

**SET - 1**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM**  
**IV B. Tech I Semester Advanced Supplementary Examinations March 2025**  
**AI Tools & Techniques**

(Open Elective)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions. **ONE** Question from **Each unit**  
All Questions Carry Equal Marks

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**UNIT-I**

1. a) Discuss in detail the various components of an AI program and their roles [7M]  
b) Explain different types of intelligent systems with suitable examples. [7M]  
(OR)
2. a) Explain the problem-solving approach in AI using state-space representation with an example. [7M]  
b) Discuss various applications of AI. [7M]

**UNIT-II**

3. a) Describe the working of Memory Bounded Heuristic Search and its advantages. [7M]  
b) Discuss in detail about A\* Algorithm [7M]  
(OR)
4. a) Explain the role of a problem-solving agent in AI. [7M]  
b) Describe the Breadth-First Search (BFS) algorithm. [7M]

**UNIT-III**

5. a) Discuss the role of propositional logic in artificial intelligence. [7M]  
b) Compare Forward Chaining and Backward Chaining with examples [7M]  
(OR)
6. a) Discuss the process of inference in first-order logic. [7M]  
b) Explain the process of Knowledge Engineering in First-Order Logic with an example. [7M]

**UNIT-IV**

7. a) Explain Reinforcement Learning and its significance in AI [7M]  
b) Discuss how Machine Learning is applied in Stock Price Prediction. [7M]  
(OR)
8. a) Explain Probabilistic Learning Models in Machine Learning [7M]  
b) Discuss Temporal Difference (TD) Learning in Reinforcement Learning. [7M]

**UNIT-V**

9. a) Explain different types of activation functions in ANNs with examples. [7M]  
b) Discuss the role of Convolutional Neural Networks and Recurrent Neural Networks in Deep Learning. [7M]  
(OR)
10. a) Explain how Deep Learning models differ from traditional Neural Networks [7M]  
b) Explain the problem of overfitting and underfitting in Neural Networks. [7M]

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