

UNIT-V

Part-A Short Questions

1. Define Reinforcement Learning and mention its components.
2. What is the “Getting Lost” problem in Reinforcement Learning?
3. Define Markov Chain with an example.
4. What is sampling in Markov Chain Monte Carlo (MCMC) methods?
5. Define proposal distribution in MCMC.
6. What is the purpose of Markov Chain Monte Carlo methods?
7. Define graphical models and state their types.
8. What is a Bayesian Network?
9. Differentiate between Bayesian Networks and Markov Random Fields.
10. Define Hidden Markov Model (HMM) and mention any two applications.

Part-B Long Questions

1. Explain Reinforcement Learning architecture with suitable example and diagram.
2. Describe the “Getting Lost” example and explain how Reinforcement Learning solves it.
3. Explain Markov Chain Monte Carlo (MCMC) methods in detail.
4. Discuss sampling techniques and proposal distributions used in MCMC methods.
5. Explain the Metropolis-Hastings algorithm with flowchart and example.
6. Describe graphical models and explain their role in probabilistic reasoning.
7. Explain Bayesian Networks with neat diagram, properties, and applications.
8. Discuss Markov Random Fields (MRF) with suitable examples and applications.
9. Explain Hidden Markov Models (HMM) and discuss Forward, Backward, and Viterbi algorithms.
10. Explain tracking methods in Machine Learning and Computer Vision with real-time applications.