

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc(SS) DEGREE EXAMINATION MAY 2023
(Sixth Semester)

Branch – SOFTWARE SYSTEMS
(Five Years Integrated)

ARTIFICIAL INTELLIGENCE

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 x 1 = 10)

1. _____ to adapt to new circumstances and to detect and extrapolate patterns.
(i) Machine learning (ii) Knowledge representation
(iii) Natural language processing (iv) Artificial intelligence
2. _____ can be applied to trees of any depth, and it is often possible to prune entire sub-trees rather than just leaves.
(i) Alpha-beta pruning (ii) Minimum
(iii) Maximum (iv) Decision tree
3. _____ is a field of artificial intelligence that is concerned with presenting real-world information.
(i) Knowledge reasoning (ii) Fuzzy logic
(iii) Fuzzy inference (iv) Knowledge Representation
4. Fuzzy inference is the process of formulating the mapping from a given input to an output using _____.
(i) fuzzy rules (ii) fuzzy reasoning
(iii) fuzzy membership (iv) fuzzy logic
5. In _____, analytically compute the conditional probability distribution over the variables of interest.
(i) exact inference (ii) approximate inference
(iii) inference logic (iv) inference fuzzy
6. _____ are generative models, in which the joint distribution of observations and hidden states, or equivalently both the prior distribution of hidden states and conditional distribution of observations given states, is modeled.
(i) Evaluation (ii) Decoding
(iii) Learning (iv) Hidden Markov models
7. A _____ refers to a stochastic decision-making process that uses a mathematical framework to model the decision-making of a dynamic system.
(i) hidden markov process (ii) Markov process
(iii) Markov chains (iv) Markov decision process
8. _____ deals with planning systems that reason on long-term goals by multiple collaborative agents which want to maintain privacy on their knowledge.
(i) Multi-agent planning (ii) Interface agent
(iii) Intelligent agent (iv) Learning agent
9. _____ is when it can provide a set of unlabelled data, which it is required to analyze and find patterns inside.
(i) Unsupervised learning (ii) labeled data
(iii) association rules (iv) clustering

Cont...

- 10 Behaviors are _____ through rewards which are gained through experiences with the environment.
- (i) supervised (ii) unsupervised
(iii) semi-supervised (iv) reinforced

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 5 = 25)

- 11 a. What is Artificial Intelligence? Explain.
OR
b. Describe the heuristic functions.
- 12 a. What is knowledge representation and reasoning in artificial intelligence? Explain.
OR
b. What is fuzzy interference system?
- 13 a. What causes uncertainty in AI?
OR
b. Distinguish the approximate inference in Bayesian Network.
- 14 a. Explain the basics of utility theory in AI.
OR
b. Write the short notes on markov decision process.
- 15 a. What is supervised learning?
OR
b. Describe the robotics in AI.

SECTION -C (40 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

Question no. 16 is compulsory

- 16 Demonstrate the foundations of artificial intelligence.
- 17 a. What are the four ways of knowledge representation in AI? Discuss.
OR
b. State the knowledge representation in fuzzy logic.
- 18 a. What is probabilistic reasoning? Explain with example.
OR
b. Explain the dynamic Bayesian network.
- 19 a. Discuss about the sequential decision problems.
OR
b. Explain about the multi-agent decision theory.
- 20 a. Discuss about the neural networks.
OR
b. Explain the Reinforcement learning.