

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc (SS) DEGREE EXAMINATION DECEMBER 2024
(Sixth Semester)

Branch – SOFTWARE SYSTEMS (Five Year Integrated)

ARTIFICIAL INTELLIGENCE

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Select three fundamental areas required in a level of mathematical formalization in a formal science.
(i) Logic, function and computation (ii) logic, computation, and probability
(iii) Algorithm, logic and function (iv) Input, computation and probability
- 2 Specify the range of values of set membership in Fuzzy logic.
(i) 0 to 1 (ii) -1 to 1
(iii) 0 and 1 only (iv) 0 to infinity
- 3 Identify that the Bayesian network is a
(i) Complete graph (ii) Euler graph
(iii) Undirected weighted graph (iv) Directed acyclic graph
- 4 Which policy yields highest expected utility?
(i) Expected utility policy (ii) High performance policy
(iii) Optimal policy (iv) Derived policy
- 5 Choose the unsupervised learning task
(i) Clustering (ii) Rewards or punishment
(iii) Input-output pairs (iv) All of these

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Determine which searching strategy followed in Breadth first search.
OR
b Show that the Backtracking search is used for depth first search.
- 7 a Distinguish general purpose ontologies from special purpose ontologies with two major characteristics.
OR
b Define Fuzzy Logic with an example.
- 8 a State that the uncertain reasoning through an example.
OR
b Develop a variable elimination algorithm for inference in Bayesian network.
- 9 a Derive the consequences of utility theory from axioms.
OR
b Define the Bellman equation for utilities with 4 X 3 world.
- 10 a Categorize the list of components to be learned by agents.
OR
b Differentiate feed-forward network over recurrent network.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

(5 x 6 = 30)

- 11 a Illustrate Genetic algorithm for digit strings representing 8 queen states.
OR
b Apply Alpha-Beta pruning technique in Minimax tree.
- 12 a Examine first order predicate logic.
OR
b Elucidate the Fuzzy rules with example.
- 13 a Create a method for constructing Bayesian networks.
OR
b Describe Hidden Markov model example: Localization.
- 14 a Classify six constraints which address the primary issue of utility theory.
OR
b Demonstrate single move game's components and solution with example.
- 15 a Enumerate the types of feedback that determines the three types of learning.
OR
b Evaluate exploration of Active Reinforcement learning.

Z-Z-Z

END