



Paper / Subject Code: 82901 / Artificial Intelligence

Time: 2 ½ Hours

Total Marks: 75

- N.B.
- 1) All questions are compulsory.
 - 2) Figures to the right indicate marks.
 - 3) Illustrations, in-depth answers and diagrams will be appreciated.
 - 4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All

(a) Multiple Choice Questions

(10M)

- I. An AI system is composed of?
 - A. Agent
 - B. Environment
 - C. Both A and B
 - D. None
- II. Which of the following is not a type of agents in artificial intelligence?
 - A. Utility
 - B. Model
 - C. Simple
 - D. Target
- III. Rationality of an agent does not depend on?
 - A. Performance measures
 - B. Percept sequence
 - C. Reaction
 - D. Action
- IV. In which ANN, loops are allowed?
 - A. Feedforward ANN
 - B. Feedback ANN
 - C. Both A and B
 - D. None
- V. What is purpose of Axon?
 - A. Receptors
 - B. Transmission
 - C. Transmitter
 - D. None of the above
- VI. The ____ for an agent specifies the action taken by the agent in response to any percept sequence.
 - A. agent function
 - B. Agent program
 - C. Agent structure
 - D. None of the above

- VII. To pass the total Turing test the computer will need _____
- A. Robotics
 - B. Computer Vision
 - C. Both A and B
 - D. None of the above
- VIII. _____ expands shallowest unexpanded node first.
- A. Breadth First Search
 - B. Depth First Search
 - C. IDA
 - D. A*
- IX. The _____, which determines whether a given state is a goal state.
- A. Goal test
 - B. Path test
 - C. Agent test
 - D. None of the above
- X. How the decision tree reaches its decision?
- A. Single test
 - B. Two test
 - C. Sequence of tests
 - D. No test

(b) Fill in the blanks (1m , Multiple Linear Model, Problem, Solution, Activation, Evidence) (5M)

- I. A search algorithm takes _____ as an input and returns _____ as an output.
- II. Function used for linear regression in python is _____
- III. When there are more than one independent variables in the model, then the linear model is termed as _____
- IV. The process of adjusting the weight in Neural Network is known as _____
- V. In Bayes Theorem, unconditional probability is called as _____

Q. 2 Attempt the following (Any THREE)

(15M)

- (a) What are Uninformed strategies? Explain any one in detail.
- (b) Explain Agent structure in detail.
- (c) What is well defined problem and solutions explain for Romanian map?
- (d) What is PEAS? Explain with two suitable examples.
- (e) List and explain the categories of definition of AI.
- (f) Write short note on Greedy Best First Search.



- Q. 3 Attempt the following (Any THREE) (15M)**
- (a) Write short note on overfitting in decision tree.
 - (b) What is entropy? How we calculate it?
 - (c) Explain Artificial Neural Network.
 - (d) What is Logistic regression explain with the help of an example.
 - (e) Explain Support vector machine and its properties.
 - (f) What is ensemble learning? How bagging algorithm works?
- Q. 4 Attempt the following (Any THREE) (15M)**
- (a) Explain maximum likelihood parameter learning for continuous model.
 - (b) What is reinforcement learning? Explain in detail.
 - (c) What are beta distributions explain with the example.
 - (d) What is EM algorithm? Explain its steps.
 - (e) Explain Naïve Bayes algorithm.
 - (f) Write short note on Hidden Markov Model.
- Q. 5 Attempt the following (Any FIVE) (15M)**
- (a) Explain the concept of goal-based agent.
 - (b) How to measure problem solving performance?
 - (c) What is linear regression? State its types.
 - (d) How supervised learning algorithm works explain with example?
 - (e) What is statistical learning?
 - (f) Explain any one application of Reinforcement learning?
 - (g) Explain Heuristic function.
 - (h) Write short note on Non parametric model.
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