

Time: (2½ Hours)

[Total Marks: 75]

- N. B.: (1) All questions are compulsory.
(2) Make suitable assumptions wherever necessary and state the assumptions made.
(3) Answers to the same question must be written together.
(4) Numbers to the right indicate marks.
(5) Draw neat labeled diagrams wherever necessary.
(6) Use of Non-programmable calculators is isallowed.

1. **Attempt any four of the following:** 20
a. What are the foundations that led to the growth & Development of AI?
b. Explain the A* Search Algorithm with example.
c. What is PEAS? Give PEAS description for any two examples.
d. Explain any two properties or Nature of task environments in detail.
e. Explain the Structure of a Learning Agent in detail.
f. Write down the different States, Actions, Transition model, Goal test & Path cost for 9- puzzle problem.
2. **Attempt any four of the following:** 20
a. Differentiate between Linear & Logistic Regression.
b. Explain the concept of Evaluating and Choosing the Best Hypothesis.
c. Describe Artificial Neural Networks in detail.
d. Discuss the concept of Learning with Decision Trees.
e. Explain Support Vector Machine with Suitable diagram.
f. What is Supervised Learning? Explain with an example.
3. **Attempt any four of the following:** 20
a. Explain the concept of Statistical Learning.
b. Write a brief note on policy search.
c. What is the concept of EM Algorithm? State its applications.
d. Write a short note on the Hidden Markov Model.
e. Explain Bayesian Learning with an example.
f. State the applications of Reinforcement Learning.
4. **Attempt any five of the following:** 15
a. Differentiate Between Weak AI and Strong AI.
b. State various applications of Artificial Intelligence.
c. Differentiate Between BFS and DFS technique.
d. Explain the structure of an AI Agent.
e. Describe the working of a Utility based Agent.
f. Write a note on Uniform Cost Search.
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