

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (R,S) (FT/WP/PT) Examination November 2025 (2019 Scheme)

Course Code: CST401**Course Name: ARTIFICIAL INTELLIGENCE****Max. Marks: 100****Duration: 3 Hours****PART A***Answer all questions, each carries 3 marks.*

Marks

- | | | |
|----|---|-----|
| 1 | Explain the terms Rationality, Omniscience and Autonomous. | (3) |
| 2 | What is PEAS? Explain the PEAS description of an automated taxi driver. | (3) |
| 3 | Differentiate between uninformed and informed search strategies in an intelligent systems | (3) |
| 4 | Explain the terms a)Search b)Open Loop System c)Abstraction | (3) |
| 5 | Define Adversarial Search. | (3) |
| 6 | What are the components in a Constraint Satisfaction Problem? Illustrate with an example. | (3) |
| 7 | What is a knowledge-based agent? How does it work? | (3) |
| 8 | Differentiate Atomic and Complex sentences with an example. | (3) |
| 9 | Describe the various forms of learning? | (3) |
| 10 | List out the difference between Classification & Regression | (3) |

PART B*Answer any one full question from each module, each carries 14 marks.***Module I**

- | | | |
|----|---|-----|
| 11 | a) For the following activities, give a PEAS description of the task environment and characterize it in terms of the task environment properties.
a) Playing soccer.
b) Bidding on an item at an auction. | (6) |
| | b) Explain the structure and Goal-based agents and Utility-based agents with the help of diagrams | (8) |

OR

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|----|---|------|
| 12 | a) How do we analyze that Artificial Intelligence is acting like a human? Elaborate the four concepts used in AI. | (10) |
| | b) Give any four applications of AI. | (4) |

Module II

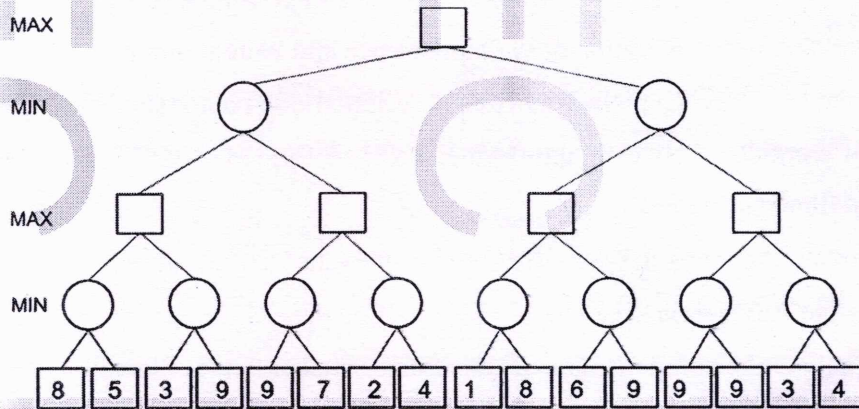
- 13 a) Write the standard formulation of 8-puzzle problem. (7)
 b) Explain any two real world problems with all components (7)

OR

- 14 a) Explain the working of Depth Limited Search with an example. (7)
 b) Explain and compare the Breadth first search and Uniform cost search with the uninformed search evaluation strategies such as completeness, optimality, space and time complexities. (7)

Module III

- 15 a) (7)



Perform alpha beta pruning on the minimax tree given above . Move ordering from left to right.

- b) Explain Arc-Consistency algorithm (AC-3) with example. (7)

OR

- 16 a) Solve the following crypt arithmetic problem using Minimum Remaining Value (MRV) and forward checking. (7)

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- b) Explain Back Tracking Search in CSPs with the help of an example. (7)

Module IV

- 17 a) List any six differences between Forward & Backward chaining. (6)

- b) (8)

1. All people who are graduating are happy.

2. All happy people smile.

3. Someone is graduating.

Give a resolution proof to answer the question "Is someone smiling?"

OR

- 18 a) Explain Unification Algorithm with an example. (7)

- b) Explain Forward Chaining and Backward Chaining with example. (7)

Module V

- 19 a) What do you mean by Linear classification with logistic regression? Explain. (10)

- b) Define (a) Information Gain (b) Gini Index (4)

OR

- 20 a) Explain Decision Tree Learning Algorithm with the help of an example. (7)

- b) Explain the different ways to avoid overfitting. (7)
