

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree (S, FE) Examination May 2023 (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

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|----|---|-----|
| 1 | What is Turing Test? Give its significance in the field of Artificial Intelligence. | (3) |
| 2 | Describe in detail the four categories under which AI is classified with. | (3) |
| 3 | What is a Rational agent? Explain. | (3) |
| 4 | List any three advantages of Depth First search. | (3) |
| 5 | What are the components of a Constraint Satisfaction Problem? Illustrate with an example. | (3) |
| 6 | Define Alpha-Beta Pruning. | (3) |
| 7 | Give the definition of Propositional logic. | (3) |
| 8 | Explain the term Skolemization. | (3) |
| 9 | State and explain Ockham's razor principle. | (3) |
| 10 | Explain about Supervised Learning. | (3) |

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

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|----|--|-----|
| 11 | a) Describe in detail about different types of Agent programs with suitable figures. | (8) |
| | b) Explain 6 applications of AI in detail. | (6) |

OR

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| 12 | a) Define PEAS in AI. For the following activities, give a PEAS description of the task environment and characterize it in terms of the task environment properties.
a) Medical Diagnosis system
b) Bidding on an item at an auction | (7) |
| | b) What are the properties of Task Environment? Explain. | (7) |

Module II

- 13 a) Discuss the heuristic function. Explain how the heuristic function helps during search procedure. Explain with a suitable example (7)
 b) Evaluate a problem as a state space search with an example. (7)

OR

- 14 a) Discuss any two uninformed search strategies in intelligent systems with examples. (9)
 b) Write A* algorithm and list the various observations about algorithm. (5)

Module III

- 15 a) What is local consistency in CSP constraint propagation? Explain different types of local consistencies. (10)
 b) Write an Arc-Consistency algorithm (AC-3). (4)

OR

- 16 a) How and when heuristic is used in Minimax search technique? Illustrate with an example. Also describe an algorithm for Minimax procedure. (8)
 b) Solve the following Crypt arithmetic problem using constraints satisfaction search procedure. (6)

i) EAT THAT ----- APPLE	ii) SEND MORE ----- MONEY
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Module IV

- 17 a) What is a knowledge-based agent? How does it work? Write an algorithm for Knowledge based agent. (7)
 b) Illustrate the use of First Order Logic to represent Knowledge. (7)

OR

- 18 a) Suppose my knowledge base consists of the facts (5)
 $S \wedge T \Rightarrow \neg (\neg P \wedge R), \neg \neg S, T$
 And need to prove **P** is entailed. Use rules of inference to do this.
 b) Differentiate Forward Chaining and Backward Chaining with their algorithms. (9)

Module V

- 19 a) Give the significance of Learning from examples. Explain the various types of Learning in problem solving. (7)

- b) How do we evaluate and choose the best hypotheses that fits the future data? (7)
Explain with a suitable method.

OR

- 20 a) Explain learning in Decision Tree with example. (8)
b) What do you meant by Linear classification with logistic regression? Explain. (6)
