

Total No. of Questions : 8]

SEAT No. :

PE-2531

[Total No. of Pages : 2

[6583]-57

T.E. (A.I.& D.S. / Computer Science & Engg.(Data Science))

ARTIFICIAL INTELLIGENCE

(2019 Pattern) (Semester - V) (310253)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer four questions [(Q.1 or Q.2), (Q.3 or Q.4), (Q.5 or Q.6), (Q.7 or Q.8)]
- 2) Neat diagrams must be drawn whenever necessary.
- 3) Assume suitable data, if necessary.

Q1) a) Explain the Min Max Algorithm with an example. Comment on the efficiency of the Min-Max Algorithm improvement using Alpha Beta Pruning. [9]

b) Solve the crypt-arithmetic problem and show the search space tree for the problem, TWO + TWO = FOUR. Identify the variables, domain and constraints. [9]

OR

Q2) a) Explain and solve the graph coloring problem, using constraint satisfaction. [9]

b) Explain with an example the Monte Carlo Tree Search. [9]

Q3) a) Explain Wumpus world environment giving its PEAS description. [9]

b) What is a Knowledge Agent? What are the aspects to be taken into consideration for designing a knowledge-based agent to assist with medical diagnosis? [8]

OR

Q4) a) Write in predicate logic the following statements. [10]

- John likes all kinds of food.
- Apples are food.
- Chicken are food.
- Anything anyone eats and isn't killed by is food.
- Bill eats peanuts and is still alive.

b) Differentiate between propositional logic and First-order logic. [7]

P.T.O.

- Q5)** a) Explain forward chaining and backward chaining for a simple example. [9]  
b) Explain the process of resolution with a proper example. [9]

**OR**

- Q6)** a) Explain the Unification Algorithm, wherever necessary take an example to explain the steps. [9]  
b) Explain the key aspects of ontological engineering, which plays a crucial role in knowledge presentation. [9]

- Q7)** a) Explain goal stack planning with an example of a blocks world. [6]  
b) Explain the components of a planning system for a simple Blocks World example. [6]  
c) What are the ethical considerations and potential limitations that arise in AI development? [5]

**OR**

- Q8)** a) Explain in brief Planning and its types. [6]  
b) What emerging trends and challenges in the future of AI. [6]  
c) Comment on AI Architecture. [5]

