Reg. No.												

Question Paper Code	12647

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Fourth Semester

Artificial Intelligence and Data Science

(Common to Third Semester - Computer Science and Engineering (AIML))

20AIPC401 - FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Identify a PEAS description for Student Bot.	2	K2	CO1
2.	Define Artificial Intelligence in terms of Rational Thinking.	2	K1	CO1
3.	Illustrate the criteria for the evaluation of search strategy.	2	K2	CO2
4.	State the different regions in State Space Landscape.	2	K1	CO2
5.	Write the sentences with quantifier variable:- (i) There is no one who does not like ice cream (ii) All roman were either loyal to Caesar or hated him	2	K2	CO3
6.	List the types of knowledge representation.	2	K1	CO3
7.	Outline the concept of semantic networks in detail.	2	K2	CO4
8.	What do you mean by disjoint categories in Ontological Engineering?	2	K1	CO4
9.	Give the STRIPS language representation for planning problems.	2	K1	CO5
10.	Differentiate Progression and Regression.	2	K2	CO5

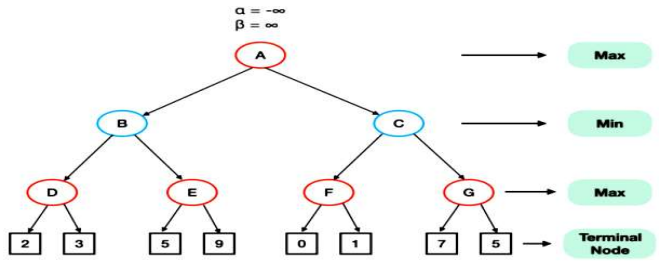
PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Discuss in detail about the following problem-solving approaches to AI problems with examples. (i) 8-puzzle problem (ii) Water jug problem	13	K2	CO1
		OR			
	b)	Explain in detail about the different types of Intelligent Agent with a neat diagram. Write the Agent program for any two types of agent.	13	K2	CO1
12.	a)	Explain the concepts with examples. (i) Best First Search. (ii) A* Algorithms.	13	K2	CO2
		OR			
	b)	Solve the scenario using Backtracking Algorithm. Given 4 x 4 chessboard with number the rows and column of the chessboard is 1 through 4. Since, we have to place 4 queens such as Q1 Q2 Q3 and Q4	13	K3	CO2

on the chessboard, such that no two queens attack each other. In such a conditional each queen must be placed on a different row, i.e., we put queen "i" on row "i."

13. a) Solve the below game tree problem by using alpha beta pruning. *13 K3 CO3*



OR

b) Consider the following sentences: Translate these sentences into formulae in Predicate logic. *13 K3 CO3*

a. John like all kinds of food. **b**. Apples are food. **c**. Chicken is food. **d**. Anything anyone eats and isn't killed is food. **e**. Bill eats peanuts and still alive. **f.** Sue eats everything Bill eats

14. a) Discuss the steps associated with the Knowledge Engineering process. *13 K2 CO4*

OR

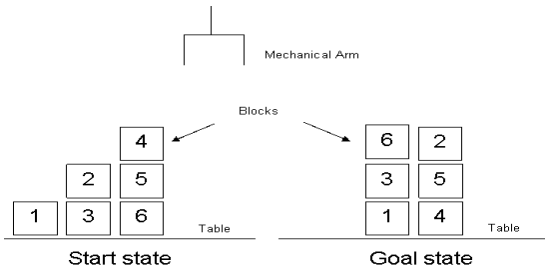
b) i) Explain the Ontology of Situation calculus. *7 K2 CO4*

ii) Brief the categories of objects in Ontological engineering with examples. *6 K2 CO4*

15. a) Explain in detail about non-linear planning and write an algorithm for POP Partial -order-plan for putting on shoes and socks with example. *13 K2 CO5*

OR

b) Solve the Goal stack planning scenario algorithm for block world problem. *13 K3 CO5*



PART - C (1 × 15 = 15 Marks)

16. a) Explain in detail about Natural Language Processing with terminologies. *15 K2 CO6*

OR

b) How do robots perceive their environment using sensors such as cameras and LIDAR? Discuss. *15 K2 CO6*