Register Number:……..

KUMARAGURU college of technology
character is life

B.E/B.TECH DEGREE EXAMINATIONS: APRIL /MAY 2024

(Regulation 2018)

Fifth Semester

INFORMATION TECHNOLOGY

U18ITE0001: Artificial Intelligence

COURSE OUTCOMES

CO1: Demonstrate the awareness of intelligent agents and problem-solving using different search algorithms
CO2: Interpret the use of different knowledge representation methods.
CO3: Make use of uncertain knowledge for planning and reasoning in AI applications
CO4: Explain the basics of decision-making.
CO5: Apply the knowledge of machine learning methods in AI applications.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	How the performance of the agents can be improved?	CO1	[K_1]
2.	Show the significance of using heuristic functions.	CO1	[K_2]
3.	Compare blind search and heuristic search algorithms.	CO1	[K_2]
4.	For the given sentence “All Pompeians were Romans” write a well-formed formula in predicate logic.	CO2	[K_3]
5.	What factors justify whether the reasoning is to be done in forward or backward reasoning?	CO2	[K_1]
6.	What is Bayesian networks?	CO3	[K_1]
7.	What are the types of planners?	CO3	[K_1]
8.	Define memorization in the context of learning.	CO4	[K_2]
9.	How is Q-learning used for learning action policies?	CO5	[K_1]
10.	What is meant by knowledge acquisition?	CO5	[K_1]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Write AO* algorithm? Use with suitable example of how AO* algorithm is used for problem reduction.	8	CO1	[K_3]
	b)	Explain the nature of heuristics with an example. What is the effect of heuristics accuracy?	8	CO1	[K_2]

12.	a)	Consider the following sentences: • John like all kinds of food • Apples are food. • Chicken is a food. • Anything anyone eats and isn't killed by is food. • Bill eats peanuts and is still alive. • Sue eats everything Bill eats. i)Translate these sentences into formulae in predicate logic. ii)Convert the above FOL into clause form.	16	CO2	[K_3]
13.	a)	Justify the need for computable functions and predicates in logic.	8	CO2	[K_5]
	b)	What is the significance of knowledge representation? Give the differences between database and knowledge base.	8	CO2	[K_4]
14.	a)	Construct a Bayesian network and define the necessary CPTs for the given scenario. We have a bog of three biased coins a, b, and c with probabilities of coming up heads of 20%,60%, and 80% respectively. One coin is drawn randomly from the bag (with equal likelihood of drawing each of the three coins) and then the coin is flipped three times to generate the outcomes X1, X2, X3.	16	CO3	[K_5]
15.	a)	Compare and contrast normative and descriptive decision theories, highlighting their respective applications and limitations.	8	CO4	[K_L]
	b)	Inspect the fundamentals of game theory and its key components, such as players, strategies, payoffs, and equilibrium concepts. Illustrate your answer with a simple example.	8	CO4	[K_L]
16.	a)	What are decision trees? Draw a decision tree for the problem of deciding whether to move forward or not at a road intersection given that the light has just turned green.	6	CO5	[K_L]
	b)	Explain about knowledge acquisition.	10	CO5	[K_4]

****