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[4064]-590-A.

Total No. of Questions: 12] [Total No. of Pages: 2

B.E. (Computer Engineering)
ARTIFICIAL INTELLIGENCE
(410444) (2008 Course) (Elective - I)

Time : 3 Hours] [*Max. Marks: 100*

Instructions to the candidates:
1) Attempt three questions from Section-I and three questions from Section-II.
2) Answers to the two sections should be written in separate books.
3) Neat diagrams must be drawn wherever necessary.
4) Assume suitable data, if necessary.

SECTION–I

Q1)	a)	What is Artificial intelligence? Explain the Turing Test Approach to act humanly.	[4]
	b)	Define an ideal rational agent? Draw and Explain the architecture of Goal based Agent	[8]
	c)	What are the properties of Environments	[4]
		OR	
Q2)	a)	Define a rational agent? Explain a generic agent diagram? Describe the four things on which rationality depends.	[8]
	b)	Explain the laws of thought approach to think rationally and describe the rational agent approach to act rationally.	[4]
	c)	Draw and Explain the architecture of Simple reflex agent	[4]
Q3)	a)	What is problem? What are the basic elements needed for solving single-state problem and formulize the 8-puzzle problem.	[8]
	b)	Explain Hill Climbing algorithm. Explain plateau, ridge, local maxima and global maxima.	[8]
		OR	
Q4)	a)	Explain Simulated Annealing Search algorithm with example	[8]
	b)	Formulize the 8-queens problem using the incremental formulation and the complete-state formulation and differentiate between them.	[8]
Q5)	a)	Define a game? Explain the MINIMAX Algorithm to determine the optimal strategy for MAX to decide the best first move.	[8]
	b)	Define Constraint Satisfaction Problem and solve the following Crptarithmetic problem: FORTY + TEN + TEN = SIXTY.	[10]
		OR	
Q6	a)	Explain the MINIMAX Algorithm with Alpha-beta Pruning with example.	[10]
	b)	Define Constraint Satisfaction Problem and solve the following Crptarithmetic problem: TWO + TWO = FOUR.	[8]

SECTION–II

Q7)	a)	Explain the procedure for converting the first-order logic sentences to Conjunctive Normal Form for the following Sentences: 1. Jack owns a dog. 2. Every dog owner is an animal lover. 3. No animal lover kills an animal. 4. Either Jack or Curiosity killed the cat, who is named Tuna. Did Curiosity kill the cat?	[12]
	b)	Explain the three components of representing the actions in classical planning with example.	[6]
		OR	
Q8)	a)	Explain three main parts of a planning in situation calculus with suitable example?	[6]
	b)	Describe following terminologies with suitable examples including its representation 1. Semantic Net 2. Frames	[12]
Q9)	a)	Define conditional probability. Explain Joint probability distribution for calculating the trivial medical domain of the two Boolean variables Toothache and Cavity.	[8]
	b)	Define Supervised learning. Explain and Draw a decision tree for deciding whether to wait for a table if a restaurant currently has no free tables.	[8]
		OR	
Q10)	a)	Explain Baye's rule and solve given problem using Baye's rule: A doctor knows that the disease meningitis causes the patient to have a stiff neck, say, 50% of the time. The prior probability of a patient having meningitis is 1/50,000, and the prior probability of any patient having a stiff neck is 1/20. Find the probability that the patients with a stiff neck to have meningitis.	[8]
	b)	Explain the expressiveness of decision trees for classifying the email messages into those that are spam and those that are not.	[8]
Q11)	a)	Explain the steps involved in natural language processing.	[8]
	b)	Explain the major problems facing by the expert system with suitable example.	[8]
		OR	
Q12)	a)	Define Parsing. Compare Top down versus Bottom up Parsing. Write a grammar and a parse tree for "the giraffe dreams".	[8]
	b)	Explain various components involved in the architecture of an Expert Systems?	[8]