Total No. of Questions : 8]

SEAT No. :

P277

[Total No. of Pages : 2

[6003]-356
T.E. (Computer Engineering)
ARTIFICIAL INTELLIGENCE
(2019 Pattern) (Semester - II) (310253)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Attempt 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 whenver necessary.***
3) ***Assume suitable data if necessary.***

Q1) a) List All problem solving strategies. What is backtracking, explain with n queen problem, with Branch and bound or Backtracking. **[8]**

b) Explain Monte Carlo Tree Search with all steps and Demonstrate with one Example. **[9]**

OR

Q2) a) i) Explain limitations of game search algorithm, Differentiate between stochastic and partial games AND. **[9]**

ii) Explain How use ofalpha and beta cut-offs will improve performance of mini-max algorithm?

b) Define is Constraint satisfaction problem, State the types ofconsistencies Solve the following Crypt Arithmetic Problem. **[8]**

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Q3) a) What is an Agent. Name any 5 agents around you Explain Knowledge based agent with Wumpus World. **[9]**

List and explain in short the various steps of knowledge engineering process.

b) Consider the following axioms: **[9]**

If a triangle is isosceles, then its two sides AB and AC are equal,
If AB and AC are equal, then angle B and C are equal
ABC is an equilateral triangle,
Represent these facts in predicate'logic.
Explain Inference in Propositional Logic

OR

P.T.O.

Q4) a) Write the following sentences in FOL (any 2) (using types of quantifiers). **[9]**

i) Every number is either negative or has a square root .
ii) Every connected and circuit-free graph is a tree .
iii) Some people are either religious or pious
iv) There is a barber who shaves all men in the town who do not shave themselves.

b) What is Resolution? Solve the following statement by using resolution algorithm. Draw suitable resolution graph. **[9]**

i) Rajesh like all kind of food.
ii) Apple and vegetables are food.
iii) Anything anyone eats and is not killed is food.
iv) Ajay eats peanuts and still alive.

Prove that Rajesh like bananas. .

Q5) a) Explain Forward Chaining and Backward Chaining. With its Properties, with one. example. **[9]**

b) Explain Unification Algorithm in FOL. Solve stepwise with proper comments if p(x,g(x)) is equal to or not equal to f (prime, f(prime)) **[8]**

OR

Q6) a) Explain FOL inference for following Quantifiers. **[8]**

i) Universal Generalization
ii) Universal Instantiation.
iii) Existential Instantiation.
iv) Existential introduction

b) What is Ontological Engineering ,in details with its categories object and Model. **[9]**

Q7) a) Explain with an example State Space Planning. **[5]**

b) Explain with example, how planning is different from problem solving. **[5]**

c) Explain AI components and AI architecture. **[8]**

OR

Q8) a) Explain Planning in non deterministic domain. **[5]**

b) Explain. **[8]**

i) Importance of planning
ii) Algorithm for classical planning

c) Explain Limits of AI and Future opportunities with AI. **[5]**

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