Total No. of Questions : 5]

SEAT No. :

PC-1728

[Total No. of Pages : 2

[6353] - 45
T.E. (Computer Engineering)
ARTIFICIAL INTELLIGENCE
(2019 Pattern) (Semester - II) (310253)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6,Q.7 or Q.8.***
2) ***Neat diagram must be drawn whenever necessary***
3) ***Assume suitable data, if necessary***

Q1) a) Define Game Theory. What are the components, defining game as a Search Problem? Draw a Game Tree for tic-tac-toe. **[9]**

b) What do you understand by Constraint Propagation? Write short notes on Node Consistency and Arc Consistency. **[8]**

OR

Q2) a) Explain how Minimax and alpha-beta algorithms change for two-players, non zero-sum games in which each player has his or her own utility function. **[9]**

b) Define Constraint Satisfaction Problem. Explain Map Coloring Example Problem. . Formulate the Map Coloring Problem as CSP. **[8]**

Q3) a) Define Knowledge base and Sentence. Describe in detail about Wumpus World Environment along with brief description to find out the agent. Explain Task Environment. **[8]**

b) Represent the followings into First Order Logic form: **[10]**

i) All employees earning Rs.45000 or more pay tax.

ii) Sita is a marine engineer and she is also an artist.

iii) Children love icecream.

iv) If Humidity is high,temperature is high then a person cannot feel comfortable.

v) Puppies are cute.

If AB and AC are equal, then angle B and C are equal.

ABC is an equilateral triangle.

Represent these facts in predicate logic.

P.T.O.

OR

Q4) a) Write Short notes on followings: **[9]**

i) Syntax and Semantics

ii) Proposition Logic Vs First Order Logic

iii) Knowledge Engineering Process in First Order Logic

b) Show the following Sentences are valid or not. **[9]**

a) $(P \wedge Q) \rightarrow (P \vee Q)$ b) $(\neg A \vee B) \wedge (\neg B \vee C) \rightarrow (\neg A \vee C)$

Q5) a) Prove that Universal Instantiation is sound and that Existential Instantiation produces an inferentially equivalent knowledge base. **[8]**

b) Write Short notes on : **[9]**

i) Forward Chaning

ii) Categories and Objects

iii) Back ward Chaining

OR

Q6) a) What do you understand by Resolution? Describe the Procedure to convert into CNF? Find the clause of the expression: $(\neg P \vee Q) \rightarrow R$ **[9]**

b) What are the reasoning systems for Catgories? Explain Semantic Network and Description Logic . **[8]**

Q7) a) Describe the differences and similarities between problem solving and planning. **[5]**

b) Explain AI components and AI architecture **[5]**

c) What are the different types of planning? How planning algorithm can be represented as state space search? **[8]**

OR

Q8) a) Explain What are Planning approaches? **[6]**

b) Explain The Blocks World in detail. **[6]**

c) What are the limitations of AI? Explain What are the Future Scopes with AI? **[6]**