P3411

SEAT No. :

[Total No. of Pages :3

[4959]-185

B.E. (Information Technology)
b: ARTIFICIAL INTELLIGENCE
(2008 Course) (Semester - I) (Elective - I) (414443)

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

Instructions to the candidates:

1) *Answers to the two sections should be written in separate sheet.*
2) *Use of logarithmic tables, slide rules and electronic pocket calculator is allowed.*
3) *Neat diagram must be drawn wherever necessary.*
4) *Figures to the right indicates full marks.*
5) *Assume suitable data, if necessary.*

SECTION-I

Q1) a) What is artificial intelligence? Explain various domains of AI. **[8]**

b) What is an agent? List down the characteristics of intelligent agent. **[8]**

OR

Q2) a) Explain Minimax search procedure with suitable example. **[8]**

b) What is Swarm Intelligent? Explain application of swarm intelligence.**[8]**

Q3) a) What is heuristics? Explain any heuristics search method. Justify how heuristics function helps in achieving goal state. **[8]**

b) Explain mini-max search algorithm for two player game. Explain how pruning help for effective searching. **[8]**

OR

Q4) a) What is state space search? How the problems are solved using space search. Explain with suitable example. **[8]**

b) Solve the following cryptarithmetic problems using constraint satisfaction. **[8]**

$$
\begin{array}{r}
O\,L\,D \\
+O\,L\,D \\
+O\,L\,D \\
\hline
G\,O\,O\,D
\end{array}
$$

Q5) a) What is FOPL? Explain how first order logic sentences are converted into conjunctive normal form (CNF). **[6]**

b) What do you understand by conceptual dependency? Give a conceptual dependency structure for the sentence "Nisha drove her car to school".**[6]**

c) Elucidate components of the scripts. Identify the props, roles, and scenes in the "college going" script. **[6]**

OR

Q6) a) Explain the properties of internal representation. **[6]**

b) Describe the advantages of predicate logic over propositional logic. **[6]**

c) What do you mean by following with respect to converting FOP in clauses form: **[6]**

o Eliminate the logical connectives ->

o Standardize all variables

o Skolemization

SECTION-II

Q7) a) What is object detection and recognition in computer vision? Explain with suitable example. **[9]**

b) What is planning? Explain the main components of a planning system.**[9]**

OR

Q8) a) Explain how vision is used for manipulation and navigation. Give suitable examples to justify your answer. **[9]**

b) Explain the concept of image formation. Briefly explain THREE Image processing operations. **[9]**

Q9) a) Explain the architecture of expert system? Also Explain the process of knowledge acquisition. **[8]**

b) Define learning? Explain learning by induction with suitable example. **[8]**

OR

*Q10)*a) Explain Hopfiled Network? Draw and explain four stable states of a particular Hopfield network. **[8]**

b) What is reinforcement learning? What is a neural network is given no feedback for its input? **[8]**

*Q11)*a) Briefly explain the structure of a prolog program with suitable example. **[8]**

b) Define predicate an objects in prolog. Discuss various types of objects used in prolog. **[8]**

OR

*Q12)*a) List the similarities and differences between prolog and conventional programming languages. Justify your answers with suitable examples. **[8]**

b) Explain the applications of Genetic Algorithms in artificial intelligence domains. **[8]**

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