

Total No. of Questions : 12]

SEAT No. :

**P2814**

**[5154]-195**

[Total No. of Pages : 3

**B.E. (Information Technology)  
ARTIFICIAL INTELLIGENCE**

**(2008 Course) (Semester - I) (Elective - I) (414443B)**

*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) Define the term artificial intelligence in your own words. Also define the role of intelligent agent in the problem solving. **[8]**
- b) What is an agent program? Describe a general model of learning agent. **[8]**

OR

- Q2)** a) Explain A\* search technique with suitable example. **[8]**
- b) Analyse the missionaries and Cannibals problem which is stated as follows. 3 missionaries and 3 cannibals are on one side of the river along with a boat that can hold one or two people. Find a way to get everyone to the other side, without leaving a group of missionaries in one place outnumbered by the cannibals in that place. **[8]**
- i) Formulate a problem precisely making only those distinctions necessary to ensure a valid solution. Draw a diagram of the complete state space.
  - ii) Design appropriate search algorithm for it.

- Q3)** a) What are the various parameters which are used to evaluate search methods? **[8]**
- b) Describe breadth first search technique. Show that is complete and optimal for unit costs. **[8]**

OR

**P.T.O.**

- Q4)** a) What is production system? Explain various problem characteristics. [8]  
b) What is state space search? How the problems are solved using space search. Explain with suitable example. [8]

- Q5)** a) Consider the following facts. [9]

- Team India
- Team Australia
- Final match between India and Australia
- India scored 350 runs Australia score 350 runs India lost 5 wickets Australia lost 7 Wickets.
- The team which scored the maximum runs wins
- If the scores are same then the team which lost minimum wickets wins the match.

Represent the facts in predicate, convert to clause form and prove by resolution “India wins the match”.

- b) What are the logics used in reasoning with uncertain information? Explain. [9]

OR

- Q6)** a) Explain the properties of internal representation. [6]  
b) Describe the advantages of predicate logic over propositional logic. [6]  
c) Write a brief note on scripts. [6]

## SECTION - II

- Q7)** a) What are planning graphs? Explain the methods of planning and acting in the real world. [9]  
b) Explain the concept of planning with state space search. How is it different from partial order planning? [9]

OR

- Q8)** a) Define the problem domain of computer vision in the context of artificial intelligence. [9]
- b) What is object detection in computer vision? List applications of object detection. [9]

- Q9)** a) Explain in detail statistical learning methods and reinforcement learning. [8]
- b) Explain in detail learning from observation and explanation based learning. [8]

OR

- Q10)**a) Explain Hopfield Network. How is it used in learning a network? [8]
- b) Explain the basic components of expert system. How can we make expert system knowledge base reusable? [8]

- Q11)**a) How the procedure for converting English to Prolog facts and Rules. Give suitable examples. [8]
- b) Explain the applications of Genetic Algorithms in artificial intelligence domains. [8]

OR

- Q12)**a) What is distributed AI. Explain its applications. [8]
- b) What is PROLOG? Explain how Prolog is used in Artificial Intelligence. [8]

