PG Even Semester Examination, September, 2023

COMPUTER SCIENCE

(8th / 2nd Semester)

Course No.: MCS-553

(Artificial Intelligence)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

The figures in the margin indicate full marks for the questions.

Answer any five questions, taking one from each unit.

UNIT-I

1. (a) Write a brief note on the following : 3x2=6

   (i) Intelligent Agent

   (ii) Control Strategies

   (iii) Problem Characteristics

   (b) State and define the Missionaries and Cannibals problem as a state space search. 8

2. (a) Write a note on the Use Cases of Artificial Intelligence. 6

(b) What is production system. Write the production rules for Water Jug Problem. 8

UNIT-II

3. (a) With suitable example distinguish between Uninformed Search strategies and Informed (Heuristics) search strategies. 6

(b) What is Constraint Satisfaction Problems (CSP)? How CSP is formulated as a search problem? Give example. 8

4. (a) Expalin the Minimax search algorithm used for decision-making in two-player games. 8

(b) What is Alpha-Beta Pruning? Explain in detail with a suitable example. 6

UNIT-III

5. (a) Define : 3x3=9

(i) Logic

(ii) Predicate Logic

(iii) Logical Agents

(b) What are the limitations of Predicate logic as a tool for knowledge representation? Illustrate through exampels. 5

6. (a) Explain the method of resolution by refutation? 8

(b) Write a brief note on the following : 2x3=6

(i) Automated Planning

(ii) Probabilistic Reasoning

UNIT-IV

7. (a) What is inductive Machine Learning? Give example. 5

(b) What is Bias and Variance in Machine Learning? Explain. 5

(c) What is Deep Learning? What are the applications of Deep Learning? 4

8. (a) Distinguish between Supervised Learning and Unsupervised Learning. Give example. 6

(b) What is Reinforcement Learning? How does it compare with other Machine Learning techniques? 8

UNIT-V

9. (a) What are the components of Natural Language Processing (NLP). In what areas NLP is used? 6

(b) Write a brief note on the following : 2x4=8

(i) Computer Vision

(ii) Expert system

10. (a) Write a brief note on Ethics of Artificial Intelligence and Robotics. 7

(b) Describe the important characteristics of Prolog programming language. 7

*****