UG/PG ODD SEMESTER (CBCS) EXAM., 2020
held in April – 2021

COMPUTER SCIENCE

7th / 1st Semester

COURSE NO. MCS - 703/MS - 103
(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)

1. a) What a brief note on problem characteristics in Artificial Intelligence (AI)? 6

   b) What is the relevance of search and control strategies in problem solving? 8

2. a) What is state space? Explain the state space for 8-queens problem. 2+6=8

   b) Define Heuristic function? What is the importance of heuristic function in search techniques? 3+3=6

3. a) Explain the different approaches to knowledge representation. 6

b) Explain problem reduction with respect to AND-OR Graph. 8

4. a) What is production system. Write the production rules for Water Jug Problem. The water jug problem is defined as: 2+5=7

We have a four-gallon jug of water and a three-gallon jug of water and there is a tap that can be used to fill the jugs with water. The challenge of the problem is to be able to put exactly two gallons of water in the four-gallon jug, even though there are no markings on the jugs.

b) Explain the method of resolution by refutation? 7

5. Explain the A* algorithm with example. 14

6. a) Distinguish between 4+4=8

i) Fact and Predicate

ii) Universal quantifier and existential quantifier

b) What are the limitations of Predicate logic as a tool for Knowledge representation? Illustrate through examples. 6

7. Explain alpha-beta pruning in min max tree. Give example. 14

8. a) What is AI Planning? Write a brief note on types of planning techniques in Artificial Intelligence. 9

b) Write a brief note on Planning applications across different domains. 5

9. a) Write a brief note on Rule-based Expert System. 7

b) Describe the phases of designing an expert system. 7

10. a) Write a brief note on features of Prolog programming language. 8

b) Write a Prolog program to reverse a list. 6