

**Question Paper Code : X10326**

**B.E./B.Tech. DEGREE EXAMINATIONS NOV / DEC 2020 AND APRIL / MAY 2021**

**Sixth / Seventh / Eighth Semester**

Computer Science and Engineering

**CS8691 Artificial Intelligence**

(Common to Mechatronics Engineering)

(Regulations 2017)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

**PART- A (10 x 2 = 20 Marks)**

1. What are the applications of AI?
2. Name the elements of an agent and list out the characteristics of Intelligent agent.
3. Differentiate between uninformed and informed search algorithms.
4. List out the classification of CSP with respect to constraints.
5. Compare forward chaining and backward chaining.
6. What are the elements and symbols of first order logic?
7. What is a software agent?
8. What do you understand about the term agent communication?
9. State the advantages of horizontal layered architectures.
10. Define Ontology.

**PART- B (5 x 13 = 65 Marks)**

11. a) Define Artificial Intelligence (AI). Explain the techniques of AI and describe the characteristics of AI. **13**
- OR**
- b) i) Show the performance measure of various search algorithms. **5**  
ii) List out and brief the necessary components to define an AI problem with an example. **8**
12. a) Explain why problem formulation must follow goal formulation. **13**
- OR**
- b) i) Define Heuristic search. What are the advantages of Heuristic search? **5**  
ii) Describe the mini max algorithm with an example. **8**
13. a) What is predicate logic? Explain the predicate logic representation with reference to suitable example. **13**

**OR**

- b) Consider the following sentences: 13
- Marcus was a man
  - Marcus was a Pompeian
  - Marcus was born in 40 AD
  - All men are mortal
  - All Pompeian's died the Volcano erupted in 79 AD
  - No mortal lives for more than 150 years
- i). convert them to clause form.
- ii). Answer the question “ is Marcus dead now” in two different ways.  
Clearly state the assumption made.

14. a) Create and design the architecture of Intelligence agent with an example. 13

**OR**

- b) With diagrammatic representation, explain Trust and Reputation in Multi-agent systems in detail. 13

15. a) Explain the concept of machine translation in detail. 13

**OR**

- b) What are the challenges in Speech Recognition techniques in Artificial Intelligence? Explain. 13

**PART- C (1 x 15 = 15 Marks)**

16. a) Consider the given problem. Describe the process involved in it. Consider 15  
the water jug problem: you are given two water jugs, a 4 gallon one and 3  
gallon one. Neither has any measuring marker on it. There is a pump that can  
be used to fill the jugs with water. How can you get exactly 2 gallon of water  
from the 4-gallon jug? Explicit.

Assumptions: A jug can be filled from the pump, water can be poured from  
one jug to another and that there are no other measuring devices available.

**OR**

- b) Explain how to translate text from one natural language (source) to another 15  
language (target) with example.