B.TECH
(SEM VI) THEORY EXAMINATION 2022-23
ARTIFICIAL INTELLIGENCE

Time: 3 Hours   *Total Marks: 100*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.**   **2 x 10 = 20**

   (a) What is weak AI and strong AI?
   (b) How Artificial intelligence is different from human intelligence.
   (c) State the significance of using heuristic functions.
   (d) List various issues in knowledge representation.
   (e) What do you mean by local minima with respect to search technique?
   (f) What is formal logic? Give an example.
   (g) What are Software Agents? Give examples.
   (h) Distinguish intelligent software agents from intelligent agents in AI.
   (i) Explain N-gram language model.
   (j) What do you mean by machine translation?

SECTION B

2. **Attempt any *three* of the following:**   **10x3=30**

   (a) Explain in detail the characteristics and application of learning agent.
   (b) Explain in detail Constraint Satisfaction Problem with example.
   (c) Determine whether the following PL formula is (a) Satisfiable (b) contradictory
       (c) Valid : $(p \wedge q) \rightarrow r \vee \neg q$
   (d) Discuss the negotiation and bargaining. Give examples of each.
   (e) Explain information extraction in detail.

SECTION C

3. **Attempt any *one* part of the following:**   **10x1=10**

   (a) Discuss the different branches of Artificial Intelligence? Also, discuss some of
       the branches and progress made in their fields.
   (b) Explain various characteristics of an agent environment? Describe with
       example.

4. **Attempt any *one* part of the following:**   **10x1=10**

   (a) Explain Min-Max algorithm in detail.
   (b) Explain the concept of alpha-beta pruning. Write alpha-beta search algorithm.

5. **Attempt any *one* part of the following:**   **10x1=10**

   (a)   Translate the following sentences into formulas in Predicate Logic and Clausal Form:
       i.   John likes all kind of food.
       ii.   Apples are food.
       iii.   Chicken is food.
       iv.   Anything any one eats and is not killed by is food.
       v.   Bill eats peanuts and is still alive. vi. Sue eats everything Bill eats.
   (b)   Explain forward and backward chaining with suitable example.

6. **Attempt any *one* part of the following:**   **10x1=10**

   (a)   Explain the architecture of intelligent agent.
   (b)   What is trust and reputation in multi-agent systems? Explain in detail.

7. **Attempt any *one* part of the following:**   **10x1=10**

   (a)   What is speech recognition? Explain in detail.
   (b)   Describe the role of Artificial Intelligence in Natural Language Processing.