Printed Pages: 02 **Sub Code: KAI-501**

Paper Id: | | **Roll No.** | | | | | | | | | | |

B.TECH
(SEM V) THEORY EXAMINATION 2023-24
ARTIFICIAL INTELLIGENCE

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

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

Q no.	Question	Marks	CO
a.	Define Artificial Intelligence with its future prospects.	2	1
b.	List the key characteristics of Intelligent Agents in the context of Artificial Intelligence.	2	1
c.	Difference between uninformed and informed search strategies.	2	2
d.	Define local search algorithms.	2	2
e.	Explain the concept of unification in First Order Predicate Logic.	2	3
f.	Describe the resolution method in the context of logic programming.	2	3
g.	Explain the key components of the architecture for intelligent agents.	2	4
h.	Define agent communication in the context of multi-agent systems. Give examples of negotiation and bargaining among agents.	2	4
i.	Define language models and explain their role in AI applications.	2	5
j.	Describe information retrieval techniques in the context of AI applications.	2	5

SECTION B

2. Attempt any *three* of the following:

Q no.	Question	Marks	CO
a.	Explain the types of Typical Intelligent Agents and provide examples for each. Evaluate the significance of these agents in AI applications.	10	1
b.	Explore the characteristics of Constraint Satisfaction Problems. Explain how constraint propagation contributes to solving CSPs.	10	2
c.	Illustrate the importance of knowledge representation in building effective reasoning systems. Provide examples to illustrate your points.	10	3
d.	Discuss how agents engage in argumentative processes and the impact on decision-making.	10	4
e.	Explore recent advancements in Natural Language Processing (NLP). Discuss the impact of these advancements on AI applications, with a focus on language understanding and generation.	10	5

SECTION C

3. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Explain the problem-solving approach used in Artificial Intelligence. Discuss how typical AI problems are addressed using this approach.	10	1

b.	Illustrate the potential future developments in Artificial Intelligence, considering technological advancements and societal implications.	10	1

4. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Explore the concept of game playing in Artificial Intelligence. Analyze the significance of optimal decisions in games. Explain the Alpha–Beta pruning technique.	10	2
b.	Define stochastic games and elaborate on their characteristics. Discuss the challenges and strategies involved in decision-making within stochastic games.	10	2

5. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Elaborate on reasoning systems used for handling categories in ontological engineering. Discuss the challenges and strategies in reasoning with default information.	10	3
b.	Define the representation of events and mental objects in knowledge engineering. Discuss how forward and backward chaining contribute to handling complex scenarios involving events.	10	3

6. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Analyze the significance of trust and reputation in multi-agent systems. Discuss how trust is established and maintained among agents and its implications.	10	4
b.	Discuss the challenges associated with agent communication in complex environments. Analyze how these challenges affect the overall performance of intelligent agents.	10	4

7. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Analyze the challenges associated with machine translation in AI applications. Propose solutions and technological approaches to overcome these challenges.	10	5
b.	Discuss the role of perception and planning in robotics within the realm of AI applications. Explore how robots use perception to make informed decisions and execute plans.	10	5