Roll No:

BTECH
(SEM VII) THEORY EXAMINATION 2023-24
ARTIFICIAL INTELLIGENCE

TIME: 3 HRS **M.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
a.	Explain the historical background and evolution of Artificial Intelligence.	2
b.	Provide a concise definition of Artificial Intelligence and its main objectives.	2
c.	What challenges arise when dealing with partial observations in search problems?	2
d.	Define Constraint Satisfaction Problems	2
e.	What is unification in the context of logic programming?	2
f.	Describe the process of resolution in logic programming.	2
g.	What are the key characteristics that define an intelligent agent in a multi-agent system?	2
h.	Explain the importance of communication among intelligent agents in a multi-agent system.	2
i.	Provide examples of real-world applications where information extraction is essential.	2
j.	Discuss the challenges associated with information retrieval in large and unstructured datasets.	2

SECTION B

2. Attempt any *three* of the following: **10 x 3= 30**

a.	Explain the role of sensors and effectors in the functioning of intelligent agents.	10
b.	Explain the basic principles of uninformed search strategies. Provide examples of algorithms falling under this category.	10
c.	Explain the concept of First Order Predicate Logic and how it is utilized in Prolog programming.	10
d.	How do intelligent agents perceive and act within their environment in the context of multi-agent systems?	10
e.	Explain the importance of pre-trained language models in various AI applications.	10

SECTION C

3. Attempt any *one* part of the following: **10 x 1= 10**

a.	Discuss how AI systems approach problem-solving, considering search algorithms and heuristics.	10
b.	What ethical considerations should be taken into account in the development and deployment of AI systems?	10

4. Attempt any *one* part of the following: **10 x 1= 10**

a.	Describe the concept of local search algorithms. Provide an example of an optimization problem and explain how local search algorithms can be applied to solve it.	10

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b.	Define informed search and heuristics. How do heuristics contribute to improving the efficiency of search algorithms?	10

5. Attempt any *one* part of the following: 10 x 1= 10

a.	Compare and contrast forward chaining and backward chaining in the context of rule-based reasoning systems. Provide examples to illustrate each	10
b.	How is knowledge represented in ontological engineering, and what role does ontological engineering play in building intelligent systems?	10

6 Attempt any *one* part of the following: 10 x 1= 10

a.	What are the different communication paradigms used by intelligent agents, and how do they facilitate collaboration?	10
b.	What role does bargaining play in resolving conflicts and reaching agreements among intelligent agents?	10

7 Attempt any *one* part of the following: 10 x 1= 10

a.	What are language models, and how do they contribute to natural language processing tasks?	10
b.	How does information retrieval play a crucial role in enhancing search engines and recommendation systems?	10

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