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**BTECH**  
**(SEM V) THEORY EXAMINATION 2025-26**  
**ARTIFICIAL INTELLIGENCE**

**TIME: 3 HRS****M.MARKS: 70**

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

**SECTION A****1. Attempt all questions in brief.****2 x 7 = 14**

Q no.	Question	CO	Level
a.	What is meant by intelligent behavior?	1	K1
b.	Define state space in Artificial Intelligence	1	K1
c.	Define a local search?	2	K2
d.	Define optimal decision in games.	2	K2
e.	Define unification in Prolog.	3	K2
f.	Define rational agent.	4	K1
g.	Explain the concept of speech recognition.	5	K1

**SECTION B****2. Attempt any three of the following:****7 x 3 = 21**

a.	Discuss the role of AI in the future of technology and society.	1	K2
b.	Solve a problem using depth-first search (DFS) and show the path explored.	2	K2
c.	Explain the role of events, mental events, and mental objects in intelligent agents' reasoning.	3	K2
d.	Explain the coordination mechanisms used in multi-agent systems.	4	K2
e.	Describe the role of information retrieval systems in modern AI applications.	5	K2

**SECTION C****3. Attempt any one part of the following:****7 x 1 = 7**

a.	Explain the transition of Artificial Intelligence from rule-based systems to machine learning-based systems.	1	K3
b.	Explain the concept of an environment in which an AI agent operates.	1	K3

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

a.	Explain the formulation and solution techniques of Constraint Satisfaction Problems (CSP) with examples.	2	K2
b.	Discuss stochastic games and the role of probability in decision-making.	2	K3

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

a.	Demonstrate resolution principle by proving a simple theorem in propositional logic.	3	K2
b.	Create a forward chaining example in a rule-based system to determine eligibility for a scholarship.	3	K2

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

a.	Explain the complete architecture of intelligent agents including deliberative, reactive, and hybrid layers.	4	K3
b.	Describe how learning agents adapt their behavior over time.	4	K3

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

a.	Explain planning algorithms in AI, such as STRIPS and hierarchical task networks.	5	K2
b.	Analyze the speech recognition techniques including acoustic modeling and language modeling.	5	K3