Dr. A.P.J. Abdul Kalam Technical University (AKTU) · B.Tech Theory Examination

Artificial Intelligence

BCAI501 · Jan 2026

Time: 3 Hours **Max. Marks: 70**

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

SECTION A

1(a)	What is meant by intelligent behavior?	2	U1
1(b)	Define state space in Artificial Intelligence	2	U1
1(c)	Define a local search?	2	U2
1(d)	Define optimal decision in games.	2	U2
1(e)	Define unification in Prolog.	2	U3
1(f)	Define rational agent.	2	U4
1(g)	Explain the concept of speech recognition.	2	U5

SECTION B

2(a)	Discuss the role of AI in the future of technology and society.	7	U1
2(b)	Solve a problem using depth-first search (DFS) and show the path explored.	7	U2
2(c)	Explain the role of events, mental events, and mental objects in intelligent agents' reasoning.	7	U3
2(d)	Explain the coordination mechanisms used in multi-agent systems.	7	U4
2(e)	Describe the role of information retrieval systems in modern AI applications.	7	U5

SECTION C

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3(a)	Explain the transition of Artificial Intelligence from rule-based systems to machine learning-based systems.	7	U1
3(b)	Explain the concept of an environment in which an AI agent operates.	7	U1
4(a)	Explain the formulation and solution techniques of Constraint Satisfaction Problems (CSP) with examples.	7	U2
4(b)	Discuss stochastic games and the role of probability in decision-making.	7	U2
5(a)	Demonstrate resolution principle by proving a simple theorem in propositional logic.	7	U3
5(b)	Create a forward chaining example in a rule-based system to determine eligibility for a scholarship.	7	U3
6(a)	Explain the complete architecture of intelligent agents including deliberative, reactive, and hybrid layers.	7	U4
6(b)	Describe how learning agents adapt their behavior over time.	7	U4
7(a)	Explain planning algorithms in AI, such as STRIPS and hierarchical task networks.	7	U5
7(b)	Analyze the speech recognition techniques including acoustic modeling and language modeling.	7	U5

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