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**Gandhi Institute of Engineering and Technology University, Odisha, Gunupur  
(GIET UNIVERSITY)**



Ph.D. (First Semester-Summer) Examinations, December – 2025

**23SPPEEE1012 – Artificial Intelligence**

(EEE)

Time: 3 hrs

Maximum: 70 Marks

**The figures in the right hand margin indicate marks.**

<b>Answer ANY FIVE Questions.</b>	<b>(14 x 5 = 70 Marks)</b>	<b>Marks</b>
1.a. What is a state space? Explain the components involved in state space formulation.		8
b. Discuss the various categories of AI based on capability and functionality.		6
2.a. Describe the working of the A* algorithm with a suitable example.		8
b. Explain the need for memory-restricted variants of A*.		6
3.a. What is inference in first-order logic? Explain forward and backward chaining.		7
b. Discuss applications of Bayesian networks in decision-making.		7
4.a. Compare heuristic and non-heuristic search methods.		8
b. Describe any two real-world applications of heuristic search.		6
5.a. Describe the goal stack planning approach with an example.		7
b. What are probabilistic reasoning systems? Explain their importance in AI.		7
6.a. What is inference in first-order logic? Explain forward and backward chaining.		7
b. Discuss resolution as a rule of inference in propositional logic.		7
7.a. Describe the steps involved in a genetic algorithm with a block diagram.		8
b. Compare supervised and unsupervised learning.		6
8.a. Describe the different forms of machine learning with suitable examples.		8
b. Differentiate between depth-first and breadth-first search with an example.		6

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