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

M.C.A. (Third Semester – Regular & Supplementary) Examinations, November – 2025

MCA23304: Artificial Intelligence

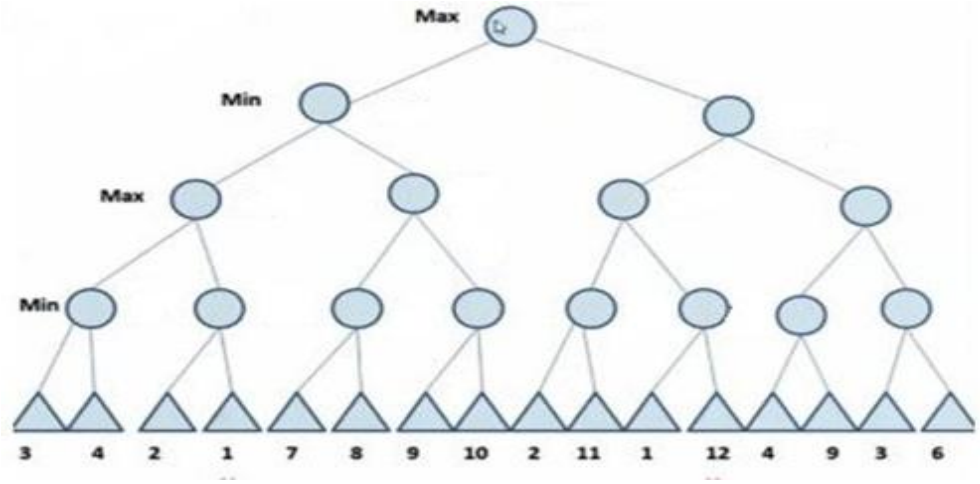
Time: 3 hrs Maximum: 60 Marks

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	What is State space? How it can be different from the normal problem-solving technique?	CO1	K2
b.	What is the difference between depth first search and breadth first search? Explain with an example.	CO2	K2
c.	Differentiate between Modus Ponens & Modus Tollens inference rules.	C04	K3
d.	What is Decision Tree? Define Entropy & Information Gain in the context of Decision Tree.	CO4	K3
e.	Define Blocks-World planning problem. Explain with an example.	CO5	K3

PART – B **(10 x5=50 Marks)**

Answer ***ALL*** questions		Marks	CO #	Blooms Level
2. a.	Explain missionaries and cannibals problem. Define its initial state, goal state & state space representation.	5	CO1	K3
b.	What is an agent? Describe different types of AI agent with appropriate diagrams.	5	CO1	K2
	(OR)			
c.	Explain Monkey Banana problem. Define its initial state, goal state & state space representation.	5	CO1	K2
d.	Solve this problem using alpha beta pruning. 	5	CO2	K3
3.a.	How the knowledge is represented in AI? Explain different knowledge representation techniques.	5	CO5	K2
b.	Explain Artificial Neural Network with its advantages and limitations.	5	CO5	K2
	(OR)			
c.	Explain Expert System & its applications.	5	CO3	K2
d.	Explain how reasoning under uncertainty is expressed in AI?	5	CO3	K2
4.a.	Explain predicate logic as a knowledge representation technique. How does it differ from propositional logic?	5	CO3	K3

b.	Explain the resolution principle in first-order logic. How is it applied in theorem proving?	5	CO4	K3
	(OR)			
c.	Describe semantic networks, frames, and scripts with examples. How do they represent structured knowledge?	5	CO3	K3
d.	Compare reinforcement learning with supervised and unsupervised learning.	5	CO4	K3
5.a.	What is conceptual dependency theory? Explain its role in natural language understanding.	5	CO3	K2
b.	Discuss the Contract-Net Protocol — explain its structure, phases, and working with a diagram.	5	CO5	K2
	(OR)			
c.	Explain classification and learning classification patterns with suitable examples.	5	CO5	K2
d.	Explain the concept of planning in AI. Describe its basic elements with examples.	5	CO5	K2
6.a.	What is unification? Explain the process of unification and lifting with an example.	5	CO4	K2
b.	Explain the main stages of Natural Language Processing with a neat diagram.	5	CO5	K3
	(OR)			
c.	Explain the Cryptarithmetic problem with an example (e.g., SEND + MORE = MONEY).	5	CO1	K3
d.	Compare all uninformed search techniques based on completeness, optimality, time, and space complexity.	5	CO2	K2

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