QP Code: RA22BTECH416 | Reg. No | | | | | | | | | | | AR 21/22

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

B. Tech(Sixth Semester – Regular/Supplementary) Examinations, April 2025

21BCDPC36003/22BCDPC36003 –- Artificial Intelligence

(CSE-DS)

Time: 3 hrs | Maximum: 70 Marks

Answer ALL questions

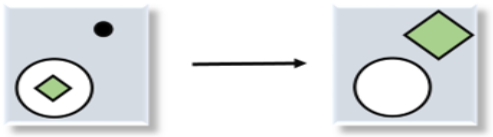
(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. What are the common issues in the design of search programs?	CO1	K2
b. How is a problem defined as a state space search?	CO1	K1
c. What is an ISA relationship?	CO2	K1
d. What are computable functions in logic?	CO2	K3
e. What is meant by "understanding" in AI?	CO3	K2

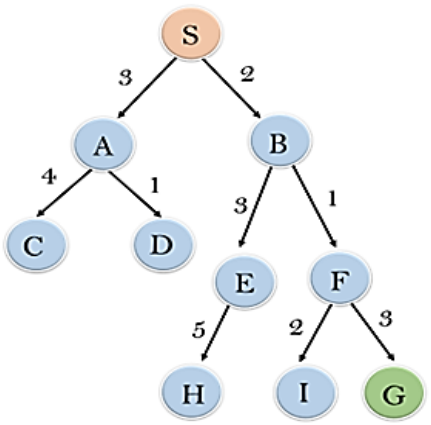
PART – B **(15 x 4=60 Marks)**

Answer ***ALL*** the questions	Marks	CO #	Blooms Level
2. a. What is Best-First Search? Explain how it works using a heuristic function and how it differs from other methods.	8	CO1	K2
b. What is Means End Analysis? Perform the operation in the following diagram using backward actions.	7	CO1	K2



(OR)

c. Briefly explain about Best First Search algorithm and calculate the following. Compare both the cost to the goal state using heuristic and normal values and gives comments about your results?	8	CO1	K2



node	H (n)
A	12
B	4
C	7
D	3
E	8
F	2
H	4
I	9
S	13
G	0

d.	What is a production system in AI? Describe its structure, types, and working with suitable examples.	7	CO1	K2
3.a.	Discuss the main implementation issues in symbolic reasoning under uncertainty. How do they affect AI performance?	8	CO2	K2
b.	Explain scripts in AI. How do they represent stereotypical sequences of events in knowledge systems?	7	CO2	K2
	(OR)			
c.	Consider the following sentences a. John like all kind of food b. Apples are food c. Chicken is food d. Anything anyone eats and is not killed by is food e. Bill eats peanuts and is still alive f. Sue eat everything bill eats Translate the above sentence in formulae in predicate logic and convert it into CNF?	8	CO2	K2
d.	What is pattern matching in rule-based systems? How does it affect inference mechanisms?	7	CO2	K2
4.a.	Explain the principles of statistical natural language processing. How does it differ from rule-based approaches?	8	CO3	K2
b.	Explain Goal Stack Planning. How are goals decomposed and solved in this approach?	7	CO3	K2
	(OR)			
c.	What is semantic analysis in NLP? Describe how meaning is extracted from syntactic structures?	8	CO3	K2
d.	What is alpha-beta pruning? Describe how alpha and beta cut offs work with a detailed example?	7	CO3	K3
5.a.	What is knowledge acquisition in expert systems? Describe the process and challenges in acquiring expert knowledge?	8	CO4	K2
b.	Explain learning by taking advice. How is it different from learning by examples?	7	CO4	K2
	(OR)			
c.	Explain the basic concepts of neural network learning. How does a neural network train itself using back propagation?	8	CO4	K2
d.	Explain the concept of explanation in expert systems. Why is it important for trust and usability?	7	CO4	K3

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