QP Code:RM21BTECH471 | Reg. No | | | | | | | | | | | AY 21

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Sixth Semester Regular) Examinations, May – 2024

21BCSPC36003 – Artificial Intelligence & Machine Learning

(CSE)

Time: 3 hrs | Maximum: 70 Marks

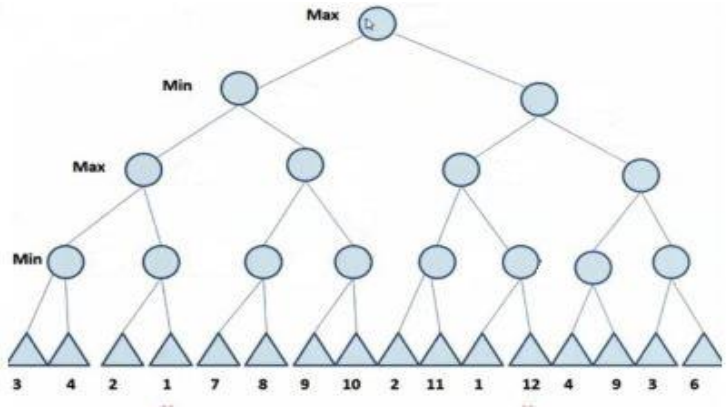
(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

		CO #	Blooms Level
Q.1.	Answer ***ALL*** questions		
a.	What are some common applications of Artificial Intelligence in various industries?	CO1	K4
b.	What is state space search in the context of AI, and how does it relate to problem-solving?	CO2	K1
c.	What is iterative deepening, and why is it useful in certain search problems?	CO3	K1
d.	What are the fundamental ways in which machines learn, and how do these processes differ from human learning?	CO4	K4
e.	What is the concept learning task in machine learning, and how does it relate to the search for a hypothesis that best fits the training data?	CO4	K 2

PART – B **(15 x 4=60 Marks)**

	Answer ***ALL*** questions	Marks	CO #	Blooms Level
2. a.	How does AI impact society, and can you provide examples of its influence in various domains?	7	CO1	K1
b.	What are learning agents, and how do they improve their performance over time?	8	CO1	K2
	(OR)			
c.	Explain in brief Missionaries and Cannibals Problem in AI.	7	CO1	K2
d.	What is the nature of agents in AI systems, and how do they interact with their environment?	8	CO1	K2
3.a.	What is the hill climbing algorithm, and what are its strengths and limitations?	8	CO2	K2
b.	Explain the state space representation of Water – Jug problem	7	CO2	K3
	(OR)			
c.	Perform MiniMax procedure on this game tree and mention the working algorithm and properties of the minimax search.	7	CO2	K3



d.	Compare and contrast best-first search and A* search algorithms with an example.	8	CO2	K3
4.a.	Define K-Fold Cross Validation and apply K-Fold Cross Validation for Instances 20 and Where K=4.	8	CO3	K4
b.	Can you provide examples of real-world applications of different types of machine learning, such as supervised, unsupervised, and reinforcement learning?	8	CO3	K2

(OR)

c. Given the following data, construct the ROC curve of the data? 7 CO3 K4

Threshold	TP	TN	FP	FN
1	0	25	0	29
2	7	25	0	22
3	18	24	1	11
4	26	20	5	3
5	29	11	14	0
6	29	0	25	0
7	29	0	25	0

d. Explain Confusion matrix, and calculate the following measures (Accuracy, Error rate, Sensitivity, Specificity, F-measure, Precision, and Recall) for the given table. 8 CO3 K4

		True Class	
		Positive	Negative
Predicted Class	Positive	120	20
	Negative	40	20

5.a.	Explain what is meant by random forests? Discuss in detail.	8	CO4	K3
b.	Explain Logistic Regression with an example and applications.	7	CO4	K3

(OR)

c. Fit a multiple linear regression model to the following data: 8 CO4 K4

X1	1	2	1
X2	1	3	3
Y	2.25	1.24	3.5

d. Explain the following: 7 CO4 K2

i. Voting
ii. Bagging
iii. Boosting.

--- End of Paper ---