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Madhav Institute of Technology & Science Gwalior (M.P)

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

3rd Year, B.TECH. EXAMINATION June 2023

Artificial Intelligence and Machine Learning (160613/160603/230603)

Time: 2 Hours **Maximum Marks: 50**

Note:
1. *Answer all five questions. All questions carry equal marks.*
2. *In each question part a and b are compulsory and part c has internal choice. Out of which part a & b carries 2 marks and part c carries 6 marks.*
3. *All Parts of each question are to be attempted at one place.*
4. *Assume suitable value for missing data, if any.*

Question No.			Marks	Course Outcomes	Bloom's Level
1.	(a)	What are the goals of AI? Explain Any two.	02	CO1	Remembering
	(b)	What is artificial intelligence (AI) and how does it differ from human intelligence?	02	CO2	Understanding
	(c)	How can AI be used to improve healthcare, and what are some current applications of AI in the medical field?	06	CO1, CO6	Applying
		Or			
	(d)	What is the cognitive science behind the AI ?			
2.	(a)	What is commonalty between biological Neuron and Artificial Neuron structure ?	02	CO1	Understanding
	(b)	What is the key difference between Supervised and Un-supervised technique?	02	CO2	Remembering
	(c)	A single-layer feedforward neural network with 2 input nodes and 1 output node with ReLu activation function i.e. ReLU(x) = max(0, x). weight is [0.2,0.5] and bias is[0.1]. Suppose you have data between three business Business 1: Revenue = $100,000, Expenses = $80,000 Business 2: Revenue = $50,000, Expenses = $30,000 Business 3: Revenue = $75,000, Expenses = $50,000 Using Neural Network predict which business produces highest profits.	06	CO2, CO6	Applying
		Or			
	(d)	Explain the Hill climbing approach with their disadvantage.			
3.	(a)	Explain different representation of datasets? (Any two)	02	CO3	Remembering
	(b)	Explain the common technique used in the optimizing the hyper-parameter? (Any Two)	02	CO3	Applying
	(c)	What are the various stages in the applying the ML in real world problem? Explain in Detail.	06	CO3,CO5	Evaluating
		Or			
	(d)	Calculate the Model accuracy, F1 score based on the Given confusion matrix:			

	Predicted Positive	Predicted Negative
Actual Positive	50	10
Actual Negative	5	100

4.	(a)	Write a set of step to implement k-NN?	02	CO4	Understanding
	(b)	Write a difference between parametric and Non-parametric approach ?	02	CO4	Remembering
	(c)	What is Decision tree? How to avoid Overfitting in decision tree?	06	CO4, CO6	Applying
		Or			
	(d)	Write strength and weakness of Random Forest ?			
5.	(a)	Write short note on clustering ?	02	CO5	Remembering

	(b)	What are the categories to divides the points in the DBSCAN algorithms ?	02	CO5	Analyzing
	(c) (d)	Explain the step-by-step algorithms of K-means Clustering Or Explain the usability of Un-supervised algorithms ?	06	CO5, CO6	Applying
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