Page 1 of 2

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2025

MACHINE LEARNING AND NEURAL NETWORKS

[Maximum Marks: **75**]

PART-A

I. Answer '*all*' the following questions in one word or one sentence. Each question carries '*one*' mark.

		Module Outcome	Cognitive level
1.	Define machine learning.	M1.01	R
2.	Define agglomerative clustering.	M2.02	R
3.	Define k means clustering.	M2.02	R
4.	List any two types of clustering.	M2.01	R
5.	Define mean squared error.	M3.03	R
6.	What is reinforcement learning?	M3.01	R
7.	List two applications of artificial neural networks.	M4.01	R
8.	Define activation function.	M4.05	R
9.	Define batch normalization.	M4.06	R

PART-B

II. Answer any 'eight' questions from the following. Each question carries 'three' marks. (8 x 3 = 24 Marks) Module Outcome Cognitive level

1.	Explain any three applications of machine learning.	M1.02	R
2.	Describe classification of machine learning.	M1.02	U
3.	Explain normalization.	M1.02	R
4.	Explain logistic regression.	M1.04	R
5.	Explain the steps involved in factor analysis.	M2.03	R
6.	What are the drawbacks of partitional clustering?	M2.01	U
7.	Explain the types of reinforcement learning.	M3.01	R
8.	Explain loss function.	M4.05	U
9.	Compare and contrast artificial neurons and biological neurons.	M4.01	R
10.	How does Recurrent Neural Network differ from Feedforward Neural Networks?	M4.04	А

(9 x 1 = 9 Marks)

[Time: **3** Hours]

PART-C

Answer '*all*' questions from the following. Each question carries '*seven*' marks. (6 x 7 = 4)

		$6 \ge 7 = 42$ Module Outcome	Marks)
III.	Explain the process involved in machine learning techniques.	M1.02	U
	OR		
IV.	Explain the importance of data preprocessing.	M1.03	R
V.	Explain random forest regression.	M1.05	U
	OR		
VI.	Explain three real-world scenarios where mean shift clustering is	M2.02	U
	useful.		
VII.	Demonstrate Linear discriminant analysis with the help of an	M2.03	А
	example.		
	OR		
VIII.	Illustrate different types of multidimensional scaling.	M2.03	А
IX.	Explain the key components of Q learning.	M3.02	R
	OR		
Х.	Demonstrate any two evaluation metrics for classification.	M3.04	А
XI.	Explain the key components of reinforcement learning.	M3.01	U
	OR		
XII.	Explain the basic concepts of artificial neural networks.	M4.01	U
XIII.	Explain the basic components of a perceptron.	M4.02	U
	OR		
XIV.	Explain back propagation algorithm.	M4.03	U
