

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER- VI EXAMINATION – SUMMER 2026

Subject Code:3165201

Date:08-06-2026

Subject Name: Fundamentals of Neural Networks

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) List out the basic elements of Neural Network.	03
	(b) Differentiate Artificial and Biological Neural Network.	04
	(c) Describe types of Activation Functions.	07
Q.2	(a) List out any three types of Learning Rules.	03
	(b) Differentiate State Space and State Variables	04
	(c) Explain Delta Learning Rule.	07
	OR	
	(c) Explain Windrow Hoff Learning Rule.	07
Q.3	(a) List out the conditions for Perceptron convergence.	03
	(b) Differentiate Linearly-separable and Non-linearly-separable.	04
	(c) Explain the structure of Perceptron and how it works.	07
	OR	
Q.3	(a) Define Overfitting and explain when it occurs.	03
	(b) Elaborate the limitations of Perceptron.	04
	(c) Explain Bayes' theorem along with its working.	07
Q.4	(a) Define the role of hidden layers of Multilayer Feedforward Network.	03
	(b) Explain the architecture of Hopfield Model.	04
	(c) Explain the algorithm and architecture of learning vector quantization.	07
	OR	
Q.4	(a) List out the properties of Feature Map.	03
	(b) Define: Support Vector Machine. Also explain its primary objective in Machine Learning.	04
	(c) Elaborate the working of Backpropagation algorithm.	07
Q.5	(a) List out the features of ART work.	03
	(b) Differentiate Machine Learning and Deep Learning.	04
	(c) Discuss the architecture and working of Kohonen Self Organizing Maps algorithm.	07
	OR	
Q.5	(a) List out the real-world applications of Deep Learning.	03
	(b) Define: Principle Component Analysis, Computer Simulation	04
	(c) Discuss the architecture and working of RDF Network.	07
