SOMAIYA VIDYAVIHAR UNIVERSITY

Trim: Jan – Mar 24 **Examination:** ETE Exam **Maximum Marks:** 50 **Date:** 13th April 2024 **Duration:** 2:30 PM to 5:30 PM		
Programme code: 10 **Programme:** MBA PT DSA	**Class:** SY	**Semester/Trimester:** VI
College: K. J. Somaiya Institute of Management	**Name of the department/Section/Center:** Data Science & Technology	
Course Code: 217P10C618	**Name of the Course:** Deep Learning	
Instructions: • **Question No. 1 is compulsory.** • **Answer any four questions from Question 2 to Question 6.**		

Question No.		Max. Marks
1.	You are tasked with developing a customer churn prediction model for an e-commerce platform. You have access to three types of data: customer demographic data, historical transaction data and customer interaction data. Using Artificial Neural Networks (ANN), explain how you would structure the model to predict whether a customer is likely to churn or not. Identify the key input features required for training the model and discuss the significance of weights and biases in capturing patterns within the data. Additionally, briefly outline the expected output of the model and how it can assist the e-commerce platform in retaining customers effectively.	(10)
2.	Define Feedforward Neural Networks (FFNNs) and describe their basic architecture, including input, hidden, and output layers. Discuss how information flows through the network during the forward pass and why there is a need for the concept backpropagation.	(10)
3.	Discuss the importance of Deep learning in the current technological era, emphasizing its necessity across industries. Provide insights into how businesses leverage deep learning for improved decision-making. Illustrate it with real-world examples.	(10)
4.	Define Recurrent Neural Networks (RNN) and explain their significance in sequence learning tasks. Discuss the challenges faced by traditional neural networks in handling sequential data.	(10)
5.	Describe the architecture of a typical Convolutional Neural Networks (CNN), including convolutional layers, pooling layers, and fully connected layers. Explain how each layer contributes to feature extraction and classification in image data.	(10)
6.	a. Explain the role of Deep Learning products and services in revolutionizing various industries. b. How can Artificial Neural Networks (ANN) be utilized in customer segmentation and targeting strategies?	(5) (5)