1: Types of Machine Learning (10 Marks)
a) Explain the main differences between Supervised, Unsupervised, and Reinforcement Learning. Provide an example for each type. (6 Marks)
b) Discuss one advantage and one limitation of each type of Machine Learning. (4 Marks)

2: Old vs. New Machine Learning (4 Marks)

Describe two significant differences between traditional Machine Learning methods and modern Machine Learning approaches like Deep Learning. Provide an example of each to illustrate your points.

3: Artificial Neural Networks and Activation Functions (10 Marks)
a) What are artificial neural networks (ANNs)? Describe their basic structure and components. (4 Marks)

4: The XOR Problem (4 Marks)
a) Describe the XOR problem and explain why it is significant in the context of neural networks. (2 Marks)
b) How do neural networks solve the XOR problem? (2 Marks)

5: Training Neural Networks and Backpropagation (10 Marks)
a) Explain the process of training a neural network. What are the key steps involved? (5 Marks)
b) Describe the backpropagation algorithm and its significance in training neural networks. (5 Marks)
6: Underfitting vs. Overfitting (6 Marks)
a) Define underfitting and overfitting in the context of machine learning models. (2 Marks)
b) Provide two strategies to prevent each issue. (4 Marks)

7: Feature Scaling and Fully Connected Layers (6 Marks)
a) Why is feature scaling important in training neural networks? Describe two common methods of feature scaling. (3 Marks)
b) What are fully connected layers in neural networks? How do they differ from convolutional layers? (3 Marks)