

1. Does gradient descent require a convex cost function to converge? Can we use Mean Squared Error for calculating gradient descent of Logistic Regression to converge to the global optima?
If not, why? **05**
2. Explain the role of the learning rate in gradient descent. What are the potential consequences of setting it too high or too low? **05**
3. Create a fictional case study where the improper use of regularization leads to significant model failures. What lessons can be learned from this scenario? **05**
4. How do filters extract features and how does pooling simplify them in a CNN? Explain in brief. **05**

1. How does logistic regression differ from linear regression in terms of the nature of the dependent variable and the type of problems it solves? **05**
2. Explain the role of the learning rate in gradient descent. What are the potential consequences of setting it too high or too low? **05**
3. Create a fictional case study where the improper use of regularization leads to significant model failures. What lessons can be learned from this scenario? **05**
4. Provide a detailed mathematical breakdown of the forward propagation process in a simple neural network. **05**

1. How can you visualize the decision boundary for a simple linear classifier? Discuss in brief. **05**
2. Explain the role of the learning rate in gradient descent. What are the potential consequences of setting it too high or too low? **05**
3. Create a fictional case study where the improper use of regularization leads to significant model failures. What lessons can be learned from this scenario? **05**
4. Evaluate the effectiveness of CNNs in image classification tasks. What problem it solved in deep learning. **05**