

Name: _____ Roll Number: _____

1. In linear regression, what does minimizing the mean squared error (MSE) accomplish?
 - A. It minimizes the absolute error between the predicted and actual values.
 - B. It minimizes the likelihood of the model given the data.
 - C. It minimizes the squared difference between the predicted and actual values, penalizing larger errors more.
 - D. It ensures the model has the best possible generalization on unseen data.

2. Which of the following is a characteristic of overfitting in polynomial regression?
 - A. The model fits the training data poorly and performs well on unseen data.
 - B. The model fits the training data very well but performs poorly on unseen data.
 - C. The model does not have enough capacity to capture the patterns in the training data.
 - D. The model produces a linear fit, regardless of the degree of the polynomial.

3. What is the purpose of using regularization in polynomial regression?
 - A. To increase the model complexity and improve training performance.
 - B. To prevent overfitting by penalizing large model coefficients.
 - C. To reduce the error on the training set.
 - D. To ensure the model fits the training data perfectly.

4. In linear regression in a polynomial space, how does increasing the degree of the polynomial affect the model?
 - A. It always improves the model's generalization performance.
 - B. It increases the model's complexity and risk of overfitting.
 - C. It reduces the model's flexibility, resulting in underfitting.
 - D. It increases the training error but reduces the test error.

5. What is the main purpose of using cross-validation in machine learning?
 - A. To maximize the training accuracy of the model.
 - B. To reduce the computational cost of training the model.
 - C. To see how well the model generalizes to unseen data by splitting the dataset into multiple training and validation sets.
 - D. To ensure that the model's complexity increases with the number of training samples.