**Short answer type questions**

1. If a matrix has a determinant of zero, what does that imply?
2. What is One-Hot Encoding, and when is it used?
3. How does Boolean Indexing work in NumPy?
4. Why is PCA used for dimensionality reduction in large datasets?
5. What is Broadcasting in NumPy, and why is it useful?
6. What is the difference between Univariate, Bivariate, and Multivariate Analysis?
7. What is a Hypothesis Test, and why is it used in data science?
8. What is Multicollinearity, and how can it be detected?
9. Why is Feature Encoding important in Machine Learning?
10. If the Silhouette Score of a clustering model is close to 1, what does it indicate?

**Long answer type questions**

1. Describe the concept of matrix decomposition using Singular Value Decomposition (SVD).
2. Describe different methods of reshaping NumPy arrays. How does array broadcasting work?
3. What are the different indexing techniques available in NumPy? Explain with examples.
4. How is outlier detection performed? Explain different techniques for handling outliers in data.
5. Explain Eigenvalues and Eigenvectors. How are they useful in data science applications?
6. What is the importance of exploratory data analysis (EDA) before applying machine learning models?
7. What is data cleaning? Discuss the various techniques used to clean raw data.
8. Describe the DBSCAN clustering algorithm. How is it different from K-Means?
9. Discuss different techniques for evaluating clustering performance. What are the internal and external evaluation metrics?
10. What is Principal Component Analysis (PCA)? How is it used for dimensionality reduction?
11. Discuss the evaluation metrics used to assess the performance of Regression models.
12. Discuss the concept of correlation in statistical analysis. How is correlation different from causation?