



Question 1:

- a) Define the concept of predictive analysis in machine learning. Discuss its significance and applications in various domains.
- b) Explain the key steps involved in performing predictive analysis. Discuss the process of data preparation, feature selection, model training, and evaluation.

Question 2:

- a) Discuss different types of machine learning algorithms used for predictive analysis. Compare and contrast supervised learning, unsupervised learning, and semi-supervised learning algorithms.
- b) Provide examples of real-world predictive analysis tasks and the suitable machine learning algorithms for each task.

Question 3:

- a) Explain the concept of feature engineering in predictive analysis. Discuss different techniques for feature extraction, feature transformation, and feature selection.
- b) Provide examples of feature engineering techniques used in predictive analysis tasks such as text classification or image recognition.

Question 4:

- a) Discuss the importance of model evaluation in predictive analysis. Explain commonly used evaluation metrics such as accuracy, precision, recall, F1 score, and area under the curve (AUC).
- b) Provide examples of how to interpret and use evaluation metrics to assess the performance of predictive models.

Question 5:

- a) Explain the concept of cross-validation and its role in predictive analysis. Discuss different types of cross-validation techniques such as k-fold cross-validation and stratified cross-validation.
- b) Discuss the advantages and limitations of cross-validation in estimating model performance and handling data variability.