1. (i) Explain the steps in making a decision tree. 4  
   (ii) How do you build a random forest model and (iii) why? 4+2
2. (i) What is the relation between feature extraction and predictive accuracy? 3

(ii) Explain the steps of text vectorization in BOW model 4  
(iii) How can you determine which feature (TF-IDF or BoW) is the most important in your model? 3

1. (i) Explain gradient descent with respect to linear regression. 5  
   (ii) In case you have more than one independent variable, how do you design the regression model? 3  
   (iii) Which plot is best suited to test the linear relationship of independent and dependent continuous variables? 2
2. (i) Explain the characteristics of Deep learning based feature extraction method. 3

(ii) Between Wrapper and filter method of feature selection, which one provide better predictive accuracy and (iii) why? 3.5+3.5

1. (i) What is cold start problem in designing Recommender Systems? 3

(ii) What additional information is required for content based approaches? 3

(iii) What is the main objective of matrix factorization in designing recommender systems? 4

1. (i) Why K-nearest neighbor classification algorithm is called lazy classifier? 4

(ii) How do you select the value of K? 3

(iii) Explain the scaling issues in the algorithm. 3