Assignment and Practice Questions

1. What is machine learning? Explain the application areas of machine learning
2. Explain different types of machine learning with examples.
3. Explain the workflow of machine learning algorithm with a suitable figure.
4. Explain what can be the data quality issue that increases the complexity in machine learning.
5. Differentiate between regression and classification with suitable example
6. Compare simple and multiple linear regression with an example
7. For a given set of data, find the line of regression

X	1	2	3	4	5	6	7
Y	3	8	7	11	12	21	22

8. Explain the need of polynomial regression in machine learning.
9. Explain ID3 algorithm.
10. How does a SVM works? Explain with example.
11. What is the advantages of Random Forest in comparison to Decision Trees.
12. What is K in KNN? How can you find the best value of k in KNN algorithm?
13. What is the use of kernel function in SVM? Explain.
14. Differentiate between bias and variance in machine learning.
15. What is learning rate? What is its uses in machine learning?
16. Explain how gradient descent optimizes the algorithm? Explain with an example
17. Using the following data, find the species for sepal length = 5.5 and sepal width = 3.5. Assume k = 5.

Feature	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Sepal Length	5.3	5.1	7.2	5.4	5.1	5.4	7.4
Sepal Width	3.7	3.8	3	3.4	3.3	3.9	2.8
Species	Setosa	Setosa	Virginica	Setosa	Setosa	Setosa	Virginica

18. Why is KNN called lazy learning method? Compare KNN with other classification algorithms?
19. What is a perceptron? Differentiate between single layer and multi layer perceptron.
20. What do you understand by time series data? Explain back propagation method in ANN.