Q1. Explain the machine learning concept by taking an example. Describe the perspective and issues in machine learning.

Q2. What is the role of preprocessing of data in machine learning? Why it is needed?

Q3. Discuss linear regression with an example. Explain the role of hypothesis function in machine learning models.

Q4. Explain the concept of perceptron, back propagation and sigmoid activation function in brief. Differentiate between classification and regression.

Q5. What are the different types of Neural networks? Explain the convolution neural network model in detail.

Q6. Explain the multilayer perceptron model in detail with neat diagram.

Q7. Explain the concept of different layers in Neural network. What do you mean by the term convolution layer, pooling layer, loss layer, dense layer? Describe each one in brief.

Q8. Explain the process of Sub-sampling of input data in neural network model. Some of the features of Keras framework for implementing neural networks models.

Q9. What do you mean by Recurrent neural network? Explain with the help of a diagram. In which cases this model is suitable.

Q10. Explain the Actor critic model. List down what are its advantages in reinforcement learning.

Q11. Explain the concept of Reinforcement Learning and its framework in details.

Q12. Describe how principle component analysis is carried out to reduce the dimensionality of data sets.

Q13. Describe Q-learning in brief. What is SARSA algorithm? Explain this.

Q14. Explain the difference between Value iteration and Policy iteration. What is Markov Decision Process (MDP)?

Q15. Write short notes on any two:
i) Natural language processing
ii) Application of machine learning in computer vision
iii) Bayesian networks

Q16. Explain the concept and role of support vector machine in details. Also, describe its application areas.

Q17. Explain K-Means algorithm with suitable example ?

Q18. Discuss in briefly about time series in ML.

Q19. Give detailed discussion on decision trees and boosting

Q20. Explain linear quadratic regulation.

Q21. Explain working principle of Independent components analysis.

Q22. Give short notes on Real world ML.

Q23. Explain how back propagation algorithms helps in classification.

Q24. Explain the steps in developing a machine learning algorithm.

Q25. What is the goal of support vector machine? How to compute the margin?

Q26. Explain Bayes theorem.

Q27. Explain Hidden Markov model.

Q28. Discuss in brief elements of reinforcement learning.

Q29. Explain different association rules with algorithms.

Q30. Explain principle component analysis with algorithm.

Q31. Write short notes on any two.
i) Big data and map reduce
ii) Common software for MC
iii) Subset selection

Q32. Define Machine learning? Briefly explain the types of learning.

Q33. Differentiate between Artificial Intelligence and Machine Learning with suitable example.

Q34. What is the advantages and disadvantages of linear regression model?

Q35. The values of independent variable x and dependent value y are given below:

X	0	1	2	3	4
Y	2	3	5	4	6

Find the least square regression line y = ax + b. Estimate the value of y when x is 10.

Q36. Explain with example classification using back propagation algorithm.

Q37. What are issues in decision tree learning? How are they overcome?

Q38. Differentiate between supervised, unsupervised and reinforcement learning with example.

Q39. Write K means algorithm and separate {5, 11, 19, 27, 23, 25, 6, 18, 2, 8, 10, 12, 31, 29, 4} into
3 clusters.

Q40. What are the elements of reinforcement learning?

Q41. Describe the working behaviour of support vector machine with suitable example.

Q42. How is Naive Bayes algorithm useful for learning and classifying text?

Q43. Explain Markov and autoregressive model with example.

Q44. Explain EM algorithm in detail.

Q45. Explain Normal or Gaussian distribution with an example.

Q46. What is Artificial Neural Network? Explain appropriate problem for Neural Network Learning
with its characteristics.

Q47. Write short notes on:
i) MATLAB
ii) Big Data
iii) Common Software for Machine Learning

Q48. Explain the unsupervised model of machine learning in detail with an example.

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