

END SEMESTER EXAMINATION : NOVEMBER 2023
SEMESTER 5 : INTEGRATED M.Sc. PROGRAMME COMPUTER SCIENCE
COURSE : 21UP5CRMCP14 : PRINCIPLES OF MACHINE LEARNING
(For Regular 2021 Admission)

Time : Three Hours

Max.Weightage : 30

PART A**Answer any 8**

1. Define the concept - model parameter tuning.
2. List any two applications in which machine learning has proved to be worthier than human learning.
3. Define the inverse logit function for a single variable logistic regression.
4. Define the inverse logit function for a multi-variable logistic regression.
5. Define the term 'bias' in the context of neural network.
6. List any two methods by which accuracy of a linear regression model can be improved.
7. State the use of `sklearn` library in Python.
8. Define the term residual in regression analysis.
9. Define the concept - linearly separable data.
10. List any two applications of supervised learning with ANN.

(1 x 8 = 8 Weight)**PART B****Answer any 6**

11. State the assumptions that must hold when building a logistic regression model.
12. Discuss the significance of using `c` - hyperparameter in SVM.
13. Explain the process of classification for linearly inseparable data using SVM.
14. There has been a rapid growth in data considering more number of features of the data under study. Explain how these features can be treated keeping in mind the performance requirements of the model.
15. Briefly discuss how unsupervised learning is performed by neural networks.
16. Discuss briefly the case of underfitting a regression model.
17. Write short notes on underfitting a model. Suggest some methods by which underfitting can be reduced.
18. Explain Bayes theorem and its associated terminologies with an example.

(2 x 6 = 12 Weight)**PART C****Answer any 2**

19. Elaborate on the various types of Bayesian models.
20. Define regularization. Explain how regularization helps in preventing overfitting in linear regression.
21. Elaborate on the structure and functioning of a Biological Neural Network.
22. List and explain the various activities involved in machine learning.

(5 x 2 = 10 Weight)