

December 2023

BCA(DS) 6th SEMESTER

Machine Learning-II (BCA-DS-312)

Time: 3 Hours

Max. Marks:75

- Instructions:*
1. *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*
 2. *Answer any four questions from Part -B in detail.*
 3. *Different sub-parts of a question are to be attempted adjacent to each other.*

- Q1
- | | |
|-----------------------------------------------------------------------------------------------|-------|
| (a) What is k-fold Cross validation technique? | (1.5) |
| (b) Differentiate between Training data and Testing and validation data. | (1.5) |
| (c) How precision, recall and accuracy are related? | (1.5) |
| (d) Why do we need sample statistics? | (1.5) |
| (e) What is the difference among Artificial Intelligence, machine learning and deep learning? | (1.5) |
| (f) What Is the Difference Between Batch Gradient Descent and Stochastic Gradient Descent? | (1.5) |
| (g) What is adaptive learning rate? | (1.5) |
| (h) What Are Hyperparameters? | (1.5) |
| (i) What is an outlier? What can you do with an outlier? | (1.5) |
| (j) What is the Central Limit Theorem? | (1.5) |

PART -B

- Q2
- | | |
|---------------------------------------------------|------|
| (a) Describe various model evaluation approaches. | (10) |
| (b) Explain Linear Discriminant Analysis. | (5) |
- Q3
- What are the basics of statistics? What are the 7 steps in hypothesis testing? Explain. (15)
- Q4
- What is Principal Component analysis? Explain the steps to perform PCA to use it for dimensionality reduction. Can we use PCA for feature selections? Give reason to support your answer. (15)
- Q5
- What is ensemble learning? How and in which ways weak classifiers can be used for classification purpose? Explain various ensemble techniques. (15)
- Q6
- | | |
|--------------------------------------------------------------------------------------------|------|
| (a) What is neural network? Explain its working with a neat diagram. | (10) |
| (b) What are multilayer perceptrons? What are its advantages over single layer perceptron? | (5) |
- Q7
- What is Reinforcement Learning? How different states are defined in this learning and what are the steps involved in it? Explain. (15)
