

## THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2023

## HONOURS IN MATHEMATICS

## GMAH3B14T: ADVANCED PYTHON PROGRAMMING

Time: 3 Hours

Maximum Marks: 80

PART A: Answer *all* the questions. Each carries *one* mark.

Multiple choice questions:

- Which of the following is used to create an identity matrix in NumPy?  
a) zeros()                      b) ones()                      c) arange()                      d) eye()
- A panel is a \_\_\_ container of data  
a) 1D                              b) 2D                              c) 3D                              d) Infinite
- What will be output for the following code?  

```
import pandas as pd
import numpy as np
s = pd.Series(np.random.randn(4))
prints.ndim
```

  
a) 0                              b) 1                              c) 2                              d) 3
- When the number of features increase  
a) Computation time increases                      b) Model becomes complex  
c) Learning accuracy decreases                      d) All of the above
- Supervised learning differs from unsupervised clustering. Supervised learning requires  
a) At least one input attribute                      b) Input attributes to be categorical  
c) At least one output attribute                      d) Output attributes to be categorical

Fill in the blanks:

- .....function of pyplot module is used to create a chart.
- .....is a pandas data structure that represent one dimensional array containing a sequence of values of any data type.
- .....function is used to create a histogram in Seaborn.
- All pandas data structure are .....mutable but not always .....mutable
- In dataset loading, The variables of data are called its.....

(10 x 1 = 10 Marks)

(PTO)

**PART B: Answer any *eight* questions. Each carries *two* marks.**

11. Define predictive analytics.
12. What is the significance of Pandas library of Python?
13. What is regression analysis in machine learning?
14. Define regression.
15. What is a histogram?
16. Name three data structures available in pandas.
17. How does machine learning work?
18. Give an example of creating series from NumPy array
19. What are the advantages of unsupervised learning?
20. What is decision tree?

**(8 x 2 = 16 Marks)**

**PART C: Answer any *six* questions. Each carries *four* marks.**

21. Mention any four applications of data analytics.
22. Differentiate between series and DataFrame.
23. Describe two types of supervised learning algorithms.
24. Mention the features of DataFrame.
25. Delineate the differences between overfitting and underfitting.
26. Explain reindexing in pandas library.
27. Differentiate between reshape() and flatten() method.
28. Discuss the advantages and disadvantages of reinforcement learning.

**(6 x 4 = 24 Marks)**

**PART D: Answer any *two* questions. Each carries *fifteen* marks**

29. Explain the following in details using examples.  
(a) Matplotlib Markers            (b) Matplotlib Line
30. Explain density plot and point plot using seaborn library. List out and explain different parameters used to chart these plots.
31. a) Explain logistic regression in detail  
b) What is SVM? Explain in detail.

**(2 x 15 = 30 Marks)**