No. of Printed Pages : **8**

A10.5-R5 : MACHINE LEARNING USING PYTHON

DURATION : 03 Hours **MAXIMUM MARKS : 100**

OMR Sheet No. :						

Roll No. : | | | | | | | **Answer Sheet No. :** | | | | | | |

Name of Candidate : _____ **; Signature of Candidate :** _____

INSTRUCTIONS FOR CANDIDATES :

- Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English language only.
- There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
- **PART ONE** is Objective type and carries **40** Marks. **PART TWO** is Subjective type and carries **60** Marks.
- **PART ONE** is to be answered in the **OMR ANSWER SHEET** only, supplied with the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book for **PART TWO**.
- Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the Answer Sheet for **PART ONE** is returned. However, Candidates who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the Answer Sheet for **PART ONE** to the Invigilator.
- **Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his/her Answer Sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
- After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question Booklet is complete in all respects.

DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

PART ONE

(Answer all the questions)

1. Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

1.1 What is the purpose of the import statement in Python ?

(A) To define a function

(B) To import external libraries or modules

(C) To declare a variable

(D) To print output to the console

1.2 Which of the following is a correct way to start a single-line comment in Python ?

(A) //

(B) /*

(C) #

(D) <!—

1.3 What is the purpose of a loop in Python ?

(A) To execute a block of code a specified number of times

(B) To declare variables

(C) To import external libraries or modules

(D) To define functions

1.4 In Python, what is the purpose of the **if** statement ?

(A) To declare variables

(B) To import external libraries or modules

(C) To execute a block of code only if a specified condition is true

(D) To define functions

1.5 Which of the following statements is used to exit a loop prematurely in Python ?

(A) next

(B) break

(C) continue

(D) exit

1.6 What is the primary purpose of a dictionary in Python ?

(A) To store elements in a sequence

(B) To store data in a sorted manner

(C) To map keys to values

(D) To store elements in a stack

1.7 What method is used to add an element to the end of a list in Python ?

(A) append()

(B) add()

(C) insert()

(D) extend()

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1.8 What is the purpose of the **len()** function in Python ?

(A) To find the length of a string

(B) To calculate the logarithm

(C) To compute the sum of elements in a list

(D) To find the length of various data structures like lists, tuples, or dictionaries

1.9 What is the purpose of modules in Python ?

(A) To store data in a structured format

(B) To create graphical user interfaces

(C) To organize Python code into reusable units

(D) To perform mathematical calculations

1.10 What is the purpose of the **__init__.py** file in a Python package ?

(A) It contains the main code of the package.

(B) It initializes the package.

(C) It is used to declare variables.

(D) It is not required in Python packages.

2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

2.1 Exception handling in Python allows programmers to gracefully handle errors and prevent program crashes.

2.2 The **else** block in Python's exception handling structure is executed if no exceptions occur in the **try** block.

2.3 The primary data structure in NumPy is the **Matrix**.

2.4 NumPy arrays support broadcasting, which allows for arithmetic operations between arrays of different shapes.

2.5 NumPy is a built-in Python library, so it does not need to be installed separately.

2.6 Supervised learning is a category of machine learning where the algorithm learns from labelled data.

2.7 Ensemble methods are primarily used for regression tasks and are not suitable for classification problems.

2.8 Computer vision is a field of artificial intelligence that enables computers to interpret and understand visual information from the real world.

2.9 Deep learning refers to neural networks with only one hidden layer.

2.10 Sentiment analysis is a natural language processing task that involves determining the sentiment expressed in a piece of text, such as positive, negative, or neutral.

3. Match words and phrases in column X with the closest related meaning / word(s) / phrase(s) in column Y. Enter your selection in the "OMR" answer sheet supplied with the question paper, following instructions therein. **(1x10)**

X		Y	
3.1	It is an ordered, immutable collection of elements in Python.	**A**	describe()
3.2	It is a category of machine learning where the algorithm is trained on input data without explicit output labels or supervision.	**B**	Text processing
3.3	It represents a two-dimensional tabular data structure with labelled rows and columns, similar to a spreadsheet or SQL table	**C**	Dictionary
3.4	Computes the mean (average) of numeric values	**D**	Functions
3.5	Generates descriptive statistics for numeric columns.	**E**	Perceptron Learning Algorithm
3.6	It is a supervised learning algorithm used for binary classification tasks.	**F**	Unsupervised learning
3.7	Removing unnecessary characters, such as punctuation, special symbols, or HTML tags.	**G**	Matplotlib
3.8	It is implemented using a hash table, which allows for fast lookup operations.	**H**	Tuple
3.9	It provides a wide range of plotting functions and customization options	**I**	DataFrame
3.10	It allows you to break down your program into smaller, modular pieces, making your code more organized,	**J**	.mean()
		K	regression
		L	Classifier
		M	re

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Choose the most appropriate option, enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. **(1x10)**

A	open-source	**B**	classification	**C**	Keras	**D**	raise
E	commas	**F**	Semi-supervised	**G**	exception	**H**	runtime
I	Matplotlib	**J**	textual	**K**	procedural	**L**	regression
M	Licensed						

4.1 Python supports multiple programming paradigms, including _____ , object-oriented, and functional programming.

4.2 Python's _____ license allows it to be used and distributed freely, making it accessible to developers worldwide.

4.3 Seaborn is built on top of _____ and provides a high-level interface for creating attractive statistical visualizations.

4.4 Lists are created using square brackets **[ ]**, and elements are separated by _____.

4.5 Common examples of supervised learning tasks include _____ and regression.

4.6 _____ learning is a hybrid approach that combines elements of both supervised and unsupervised learning, where the model learns from a combination of labelled and unlabelled data.

4.7 Popular libraries and frameworks for computer vision tasks include _____ , OpenCV, TensorFlow, PyTorch, and scikit-image.

4.8 Text processing involves manipulating and analyzing _____ data.

4.9 The try block in Python is used to wrap the code that may potentially raise an _____.

4.10 The raise keyword in Python is used to explicitly _____ an exception.

PART TWO

(Answer any FOUR questions)

5. (a) Explain the role of loops in Python programming and provide examples of different types of loops.

(b) Explain tuples with example.

(c) Explain Features of python. **(7+4+4)**

6. (a) Explain exception handling in python with suitable example.

(b) Explain aggregation functions. **(8+7)**

7. (a) Explain different categories of Machine Learning.

(b) Explain decision tree with example.

(c) Explain Ensemble Methods of Classification in machine learning. **(6+4+5)**

8. (a) Explain ANN structure.

(b) Explain sentiment analysis and text classification. **(7+8)**

9. (a) Explain panda library in python.

(b) Explain modules and packages. **(8+7)**

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