

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SECOND SEMESTER M.TECH DEGREE EXAMINATION (Regular), JULY 2022

(2021 Scheme)

Course Code: 21SE205-E

Course Name: PYTHON FOR MACHINE LEARNING

Max. Marks: 60

Duration: 3 Hours

PART A

(Answer all questions. Each question carries 3 marks)

1. You are given a string that contains a combination of the lower and upper case letters. Write a Python program to arrange the characters of a string so that all lowercase letters should come first.
2. Write a Python program to do the following tasks:
 - (i) Create an outer function that will accept two parameters, a and b
 - (ii) Create an inner function inside an outer function that will calculate the addition of a and b
 - (iii) At last, an outer function will add 5 into addition and return it
3. Given two strings, s1 and s2. Write a program to create a new string s3 made of the first char of s1, then the last char of s2, Next, the second char of s1 and the second last char of s2, and so on. Any leftover chars go at the end of the result.
4. Write a Python program to check if one set is a subset of the other. If found delete all the elements.
5. Write a Python program to compute several descriptive statistics of the passed array.
6. What is/are the functionalities of the following functions upon Python arrays?
Append(); copy(); reverse(); sort()
7. What is Pandas Profiling?
8. Write Python program to plot histogram by assuming your own data and explain the various attributes of histogram.

PART B

(Answer one full question from each module, each question carries 6 marks)

MODULE I

9. a) Give a Python program to write all content of a given file into a new file by skipping line number 5 (3)
- b) What are the differences between pickling and unpickling? (3)

OR

10. Illustrate type() and isinstance() with example code (6)

MODULE II

11. Write a Python code with the following specifications
- i) Read a number above 35690, store it to variable num and display it
 - ii) Convert the number to binary without using in-built function and display it
 - iii) Count the number of 1 in binary representation and store it to a.
 - iv) Count number of 0 in binary representation and store it to b. (6)
 - v) if $a > b$, find the sum of digit of num and display sum
 - vi) if $a < b$, check whether num is prime or not
 - vii) if a and b are the same, find the nearest integer to num which is power of 2.

OR

12. Given an array of integers where each element represents the max number of steps that can be made forward from that element. The task is to find the minimum number of jumps to reach the end of the array (starting from the first element). If an element is 0, they cannot move through that element. Write a Python program to achieve this (6)

MODULE III

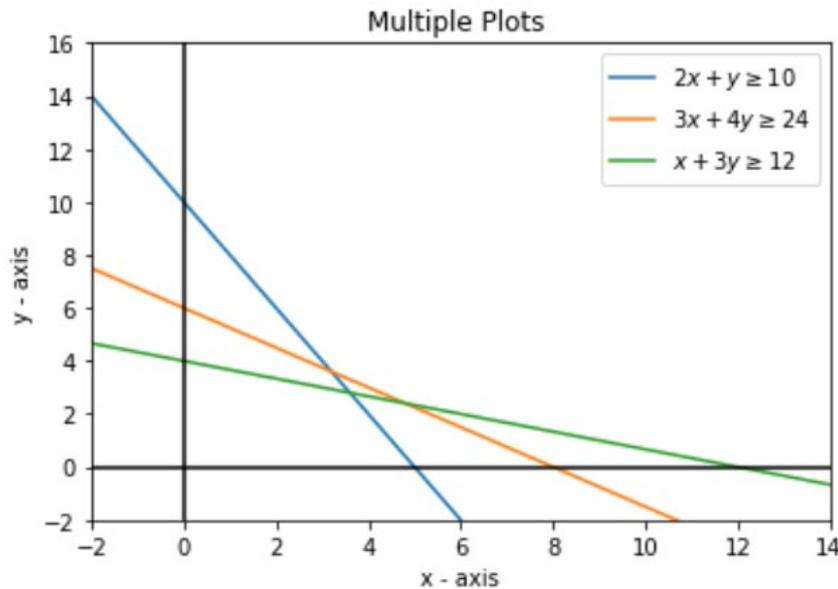
13. a) Write a Python program to create a new dictionary by extracting the mentioned keys from the below dictionary. (4)
- Given dictionary:**
- ```
sample_dict = {
 "name": "Kelly",
 "age": 25,
 "salary": 8000,
 "city": "New york"}
```
- # Keys to extract  
keys = ["name", "salary"]
- b) Write a Python program to check if value 8000 exists in the following dictionary. (2)

## OR

14. a) Write a Python Program to Counts the number of occurrences of item 50 from a tuple  
Given: tuple1 = (50, 10, 60, 70, 50) (3)
- b) Write a Python Program To remove an empty tuple(s) from a tuple of tuples.  
Sample data: ((), (2), (,), ('x', 'y'), (), ('p', 'q', 'r'), (), (3,4)) (3)  
Expected output: (2, (,), ('x', 'y'), ('p', 'q', 'r'), (3, 4))

## MODULE IV

15. Write a Python Program to display the following graphs:



(6)

OR

16. Write a Python Program to do the following tasks:
- Display sum of column (0, 0, 0, 0)
  - Convert column (0, 0, 0, 0) into a matrix of 32 rows and 32 columns. First row in matrix is the first 32 values in column (0, 0, 0, 0) and last row in matrix contains last 32 values in column (0, 0, 0, 0) like that. Display the following
    - Trace
    - Determinant
    - Rank
    - Largest Eigen Value

(6)

## MODULE V

17. Define Cross validation. Explain its significance in ML. Give an example code snippet to perform *k fold* cross validation

(6)

OR

18. a) Define Confusion matrix. Explain its relevance
- b) The following incomplete code depicts creation of a confusion matrix. Fill in with appropriate lines of code.

(2)

```
import _____
import _____
from sklearn import metrics
```

```
actual = numpy.random.binomial(1,.9,size = 1000)
predicted = numpy.random.binomial(1,.9,size = 1000)
confusion_matrix = _____
cm_display= metrics.ConfusionMatrixDisplay(_____)
cm_display.plot()
plt._____
```

(4)

**MODULE VI**

19. Assume that you have data clustered using agglomerative clustering algorithm. Give a stepwise procedure to convert the data into dendrogram representation. (6)

**OR**

20. Write Python program to compute loss and optimization in deep learning. (6)

\*\*\*\*\*