

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (R,S) (FT/WP/S4PT) Examinations April 2026 (2019 Scheme)

Course Code: CST362

Course Name: PROGRAMMING IN PYTHON

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|----|--|-----|
| 1 | Which of the following can be used as valid variable identifier(s) in Python?
(i) 123var
(ii) count
(iii) Number# | (3) |
| 2 | Explain the concept of scope and lifetime of variables in Python programming language, with a suitable example. | (3) |
| 3 | Write a recursive function in python to find factorial of a number. | (3) |
| 4 | What are mutable and immutable properties in the case of Python data structures? Give examples? | (3) |
| 5 | Write a program to draw a radial pattern with 10 hexagons | (3) |
| 6 | Explain any three types of window component with attribute | (3) |
| 7 | Compare multiple and multilevel inheritance. | (3) |
| 8 | Explain the terms accessors and mutators with regard to Python class definition. | (3) |
| 9 | What is the difference between loc and iloc in pandas DataFrame? Give a suitable example. | (3) |
| 10 | What are the important characteristics of CSV file format? | (3) |

PART B

Answer one full question from each module, each carries 14 marks.

Module I

- | | | |
|----|---|-----|
| 11 | a) Mention the different types of loop control statements allowed in Python and explain each type with suitable examples. | (7) |
| | b) write a program to input x and y values of a point in XY coordinate system and find its quadrant. | (7) |

OR

- 12 a) Write a python program to generate the following type of pattern for the given N (7)
rows.

```

1 1 1 1
1 1 1
1 1
1

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- b) Write a program to print sum of squares of negative numbers and positive numbers (7)
from N given numbers

Module II

- 13 a) Write a Python program to convert a decimal number to its binary equivalent (7)
b) Describe the concept of functions and recursive functions in Python with (7)
suitable examples

OR

- 14 a) Create a Python program that uses a dictionary to store the names and branches of (6)
N students in a college. Ask the user to enter a name, and the program should
display the branch of that student
b) Write a Python program to check the validity of a Password. The following are (8)
the conditions for password validation.
-Minimum 8 characters.
-The alphabet must be between [a-z]
-At least one alphabet should be of Upper Case [A-Z]
-At least 1 number or digit between [0-9].
-At least 1 character from [@ or \$].

Module III

- 15 a) Explain basic image processing with inbuilt functions in python (7)
b) How to draw a star shape using turtle in Python (7)

OR

- 16 a) Write a GUI application that serves as interest calculator. Your GUI must take (8)
Principle, Rate of interest and time in years as inputs from the user. It must let the
user chooses whether they want to calculate Simple interest or Compound interest
and the final output are displayed in a single output filed accordingly?
b) Write a python program to convert a colour image to grayscale image (6)

Module IV

- 17 a) What is an abstract class in Python? Explain with an example. (6)

- b) Illustrate with a real-life example how multi-level inheritance is implemented in Python. (8)

OR

- 18 a) Create a class Person with attributes name, age, salary and a method display () for showing the details. Create two instances of the class and call the method for each instance. (8)

- b) Illustrate with suitable examples how exceptions are handled in Python (6)

Module V

- 19 a) Explain how the matrix multiplications are done using NumPy arrays (7)

- b) Given the sales information of a company as CSV file with the following fields (7)
Month_number, facecream, facewash, toothpaste, bathingsoap, shampoo, moisturizer, total_units, total_profit.

Write Python codes to visualize the data as follows

- 1) Toothpaste sales data of each month and show it using a scatter plot.
- 2) Face cream and face wash product sales data and show it using the bar chart

OR

- 20 a) Write Python program to write the data given below to a CSV file (7)

Name	Roll No	Branch	Mark1	Mark2	Total
Anu	1	EC	45	48	93
Raj	2	EE	40	42	82
Leena	3	ME	35	43	78
Minu	4	EE	40	50	90

- b) Consider the above csv file with fields Name, Branch, Mark1, Mark2 and total, write python code using pandas to (7)

- 1) To display the rollno, name, Total in the descending order of Total mark
- 2) Read and display the file contents
- 3) Find the average mark, minimum and maximum of total mark
