LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – STATISTICS

THIRD SEMESTER – NOVEMBER 2018

16/17PST3ID01 – MATHEMATICAL AND STATISTICAL COMPUTING

Date: 02-11-2018   Dept. No.   Max. : 100 Marks
Time: 09:00-12:00

Part A

Answer all the questions   10 X 2 = 20

1. What is the output of the following python program.

   for i in range(1,10):

   if i == 5:

   continue

   print(i**2)

2. List any two advantages of python language.

3. Write a Python programme using while loop statement to print the following output.

   The count is: 0

   The count is: 20

   The count is: 40

   The count is: 60

   The count is: 80

4. Find the output of the following program.

   x=[1,2,3]

   y=x[2]**3

   print(y)

5. What is the use of NumPy package in python?

6. Find the error in the given program.

   num1 = -25

   if num1 >= 0

   print("Positive or Zero")

   else

   print("Negative number")

7. Specify the use of the command *format loose* and *format compact* in command window.

8. How do you work with cross product of two vectors in MATLAB? Illustrate with an example.

9. Define interpolation.

10. How do we represent the polynomial $4x^4 - 7x^2 + 5$ in MATLAB?

1

Part B

Answer any five questions   **5 X 8 = 40**

11. List and explain the various features of Python programming language.
12. Explain any four packages in python programming except numpy.
13. Explain the following data types in python programming with suitable examples.
    a) Python Numbers
    b) Python List
    c) Python Tuple
    d) Python Set
14. Write python code to construct multiple bar chart for the following dataset.

Name	Marks		
	Mathematics	Statistics	Physics
Ravi	80	50	73
Prasana	64	96	82
Sangeetha	30	70	97
Deepa	90	60	40

15. List any four Exceptions in Python Language. Also explain with suitable examples.
16. Describe Linspace function and Logspace functions with suitable examples.
17. Write a short note on output statements in MATLAB using appropriate examples.
18. Explain the following plotting functions each with an example:
    (a) bar   (b) plot   (c) comet3   (d) mesh

Part C

Answer any two questions   **2 X 20 = 40**

19. Explain the following python statements with examples
    a) If else statement
    b) For loop statement
    c) While loop statement
    d) Break
    e) Continue
20. Describe the testing procedure for one sample t test and Kuruskal Wallis test and explain python codes to run these tests.
21. a) Write a function to calculate Pearson correlation coefficient and to display interpretation using at 5 % level.
    b) Explain the different types of looping statements used in MATLAB, each with an example.   (10 + 10)
22. (a) Explain the method to change the plot colour, line styles, and data markers.
    (b) Write MATLAB commands to evaluate the following:

(i) $y = 7x^4 - \dfrac{3}{x^2}$ (ii) $y = 3\dfrac{tanx}{4}$ (iii) $y = 8x^{1/2} + 3x^{0.58}$

(iv) $r = \dfrac{1}{\frac{1}{a}+\frac{1}{b}+\frac{1}{c}+\frac{1}{d}}$ (v) $\dfrac{d^2}{dx^2}(\tan x)$ (10 + 10)

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