

**M. SC. (APPLIED STATISTICS)
(MSCAST)**

**Term-End Examination
June, 2026**

MST-024 : DATA ANALYSIS WITH PYTHON

Time : 2 Hours

Maximum Marks : 25

Note : (i) *Question No. 1 is compulsory.*

(ii) *Attempt any **two** questions out of the remaining question nos. 2 to 4.*

(iii) *Use of scientific calculator (non-programmable) is allowed.*

(iv) *Symbols have their usual meanings.*

1. Answer the following :

(a) Write the output of the following python code : 1

a = 5

b = 10

c = 5

```

if a == b or b == c :
    print (100)
elif a == b and b > 10 :
    print (200)
else :
    print (300)

```

- (b) Find and correct the error in the following code : 1

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list = [1, 2, 3, 4]
print (list [4])

```

- (c) Create a user-defined function to calculate the factorial of a given number using recursion. 3

2. Write a python program using *Numpy* to :

- (i) Create the following two matrices A and B with the following elements : 2

$$A = \begin{pmatrix} 2 & 1 & 1 \\ 1 & 3 & 2 \\ 1 & 0 & 0 \end{pmatrix}$$

$$\text{and } B = \begin{pmatrix} 1 & 2 & 3 \\ 0 & 1 & 4 \\ 5 & 6 & 0 \end{pmatrix}$$

- (ii) Compute the (a) addition and (b) multiplication of these matrices. 5
- (iii) Combine the given matrices column-wise. 3
- 3. (a) How do we handle missing values in Python ? Explain with examples. 6
- (b) What are the iterable functions in Python ? Explain with examples. 4
- 4. (a) What is *Matplotlib* and why is it used in Python ? 2
- (b) What is the purpose of *Pyplot* in *Matplotlib* ? 1
- (c) How can we change the colour and style of a line in a plot ? 2
- (d) How can we save a *Matplotlib* plot to a PNG and PDF file format ? 2
- (e) What is the difference between *plt.plot()*, *plt.scatter()* and *plt.bar()* ? 3

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