



23105595

QP CODE: 23105595

Reg No :

Name :

**B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS,
MARCH 2023**

Sixth Semester

**CHOICE BASED CORE COURSE - MM6CBT02 - BASIC PYTHON PROGRAMMING
AND TYPESETTING IN LATEX**

Common for B.Sc Mathematics Model I & B.Sc Mathematics Model II Computer Science

2017 Admission Onwards

70A34EA0

Time: 3 Hours

Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. For what purpose the symbol '#' is used in Python?
2. What are the arithmetic operators in Python?
3. What is the difference between `int(input())` and `input()` functions?
4. What do you mean by global variable in Python? Give example.
5. Define recursion in Python?
6. Explain the Boolean code '`a' == ('a' or 'b')` in Python.
7. Write the general form of list slicing operator in Python. Explain.
8. What are the two modes used to open a Python file?
9. Write the uses of the commands `\noindent` and `\@`.
10. What are the commands used to create additional entries in the table of contents?
11. Write the output of the *L^AT_EX* code

The matrix $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$

$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$

$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$ is invertible iff $ad-bc \neq 0$



12. What are the different theorem styles available in the **amsthm** package?

(10×2=20)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Explain the difference between finite loop and infinite loop in Python with example.
14. Write a program for finding the greatest of three numbers.
15. Write a Python program to find sum of all integers between 101 and 1001 which are divisible by 5.
16. With example program explain 'remove()', 'sort()' and 'append()' in Python list.
17. Write a program to create an empty dictionary, add three entries, remove the second entry and change the value of first entry.
18. Write output of the following Python codes
- ```
str="MATHEMATICS"
print(str[: 3])
print(str[:])
print(str[::-1])
```
19. Write a note on `\pagestyle` command in *L<sup>A</sup>T<sub>E</sub>X*.
20. Write a note on the 'enumerate' environment.
21. Write the output of the following *L<sup>A</sup>T<sub>E</sub>X* code.

```
\begin{tabular}{|c|l|c|r|}\hline
Sl. No & Name & Mark & Rank\\
\hline
1 & Abi & 30 & 3 \\ \hline
2 & Arun & 48 & 1 \\ \hline
3 & Amal & 42 & 2 \\ \hline
\end{tabular}
```

(6×5=30)

### Part C

Answer any **two** questions.

Each question carries **15** marks.



22. a) Write syntax of for loop and while loop.  
b) Write Python program to print factorial of n using both loops.
23. (a) Explain in detailed function in Python.  
(b) Write a program to display Fibonacci series using function.  
(c) Write a program to display sum of ten numbers using function.
24. Explain the environments used for displaying such as add quote, poetry, Bulleted list, and Numbered list.
25. (a) Write the  $LAT_{EX}$  code to produce the following output.

The system of equations

$$\begin{aligned}x + y - z &= 1 \\x - y + z &= 1 \\x + y + z &= 1\end{aligned}$$

can be written in the matrix form as

$$\begin{pmatrix} 1 & 1 & -1 \\ 1 & -1 & 1 \\ 1 & 1 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix}$$

Here, the matrix  $\begin{pmatrix} 1 & 1 & -1 \\ 1 & -1 & 1 \\ 1 & 1 & 1 \end{pmatrix}$  is invertible.

- (b) Write the  $LAT_{EX}$  code to produce the following output.

Euler not only proved that the series  $\sum_{n=1}^{\infty} \frac{1}{n^2}$  converges, but also that

$$\sum_{n=1}^{\infty} \frac{1}{n^2} = \frac{\pi^2}{6}$$

(2×15=30)