QP CODE: 21101242

21101242

Reg No : .....

Name : .....

# B.Sc DEGREE (CBCS) EXAMINATION, APRIL 2021

## 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

8F6E602D

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 is a control structure? Give examples of control structures in Python.
3. Write short note on for loop in Python.
4. What do you mean by global variable in Python? Give example.
5. Using recursion function, write code for multiplication of two numbers.
6. Explain the Boolean code 'a' ==('a' or 'b') in Python.
7. What is the output of following code?

```
a=[1,2,3]
b=a*2
print(a)
print(b)
```

8. Write the output of the Python code

```
with open("text.txt","wt") as out_file:
    out_file.write("The Text is going to out file\nLook at it and see!")
with open("text.txt","rt") as in_file:
    text = in_file.read()
print(text)
```

9. Write the LaTeX code for the output:

This is my *first* document prepared in LaTeX

10. What is the general form of an environment in $LaTeX$? Give an example.

11. Write the output of the $LaTeX$ code

```
\begin{tabular}{c|c}
\hline
Name & Marks\\ \hline
Abhilash & 90\\
Arun & 85\\ \hline
\end {tabular}
```

12. Write the $LaTeX$ command to produce the equation $\frac{a}{b} = \frac{c}{d}$

(10×2=20)

**Part B**

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Explain the arithmetic operators in Python and write down its hierarchy.

14. Write a program that gets 2 string variables and 2 number variables from the user, concatenates and display the strings, then multiply the two numbers on a new line with output.

15. Explain the difference between finite loop and infinite loop in Python with example.

16. With example program explain 'del', 'len', 'sort()' and 'append()' in Python list.

17. How can you remove and add an entry in a dictionary? Give example.

18. Write a Python program to display the middle character of a string.

19. Write a short note on 'titlepage' or 'title' part of the document. How do we set this in $LaTeX$ typesetting.

20. Write a $LaTeX$ code to produce the following output.

## Bibliography


[1] Leslie Lamport, 1985. LATEX—*A Document Preparation System—User's Guide and Reference Manual*, Addision-Wesley, Reading.

[2] Donald E. Knuth, 1989. *Typesetting Concrete Mathematics*, TUGBoat, 10(1):31-36.

[3] Ronald L. Graham, Donald E. Knuth, and Ore Patashnik, 1989. *Concrete Mathematics: A Foundation for Computer Science*, Addison-Wesley, Reading.


21. Explain the ready-made theorem styles in the **AMSTHM** package using examples.

(6×5=30)

## Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. Write syntax of for loop and while loop.
    Write Python program to print factorial of n using both loops.

23. (a)What is the relation between function and recursion?
    (b)Write a program to find P(n,r) and explain.

24. Explain type styles and type sizes in $LaTeX$. Illustrate them using examples.

25. Explain the following environments with examples

    1. equation
    2. equation*
    3. multline*
    4. split
    5. gather
    6. align*
    7. aligned

(2×15=30)