MODEL QUESTION PAPER-1
SECOND SEMESTER B.Sc. MATHEMATICS
$MM2BO2$: **INFORMATICS AND MATHEMATICAL**
SOFTWARE

Time : 3Hours. Maximum : 30 weightage

Part A :Answer all questions ($12 \times \frac{1}{4} = 3weightage$)

1. What will be the output of print "5*3"*2 ?

    (a) 30
    (b) 5*3*5*3
    (c) 5*35*3
    (d) 225

2. Which of the following is not an operating system ?

    (a) MS DOS
    (b) MS Windows
    (c) GNU/Linux
    (d) Python

3. Which of the following is not a valid datatype in python ?

    (a) int
    (b) float
    (c) double
    (d) str

4. What gets printed ?

```
x,y=4.5,2
print x//y
```

    (a) 2.0
    (b) 2.25
    (c) 9.0
    (d) error

5. How do you get the imaginary part of a complex number z in python?

    (a) imag.z

    (b) z.imag

    (c) imag(z)

    (d) z(imag)

6. Study the code below :

```
for i in x:
    print i
```

Which of the option below is not correct?

    (a) x is s str

    (b) x is an int

    (c) x is a list

    (d) x is a tuple

7. colors=['red','orange','yellow','green','blue','green']
   What is the value of colors[2]

    (a) orange

    (b) yellow

    (c) green

    (d) redorange

8. What python statement allows the numpy module to be used in a python program

    (a) load numpy

    (b) input numpy

    (c) import numpy

    (d) none of the above

9. What is the output of the python program:

```
from numpy import *
a=array([1,2])
b=array([3,4])
c=dot(a,b)
print c
```

   (a) 11

   (b) array([3,8])

   (c) -2

   (d) Error

10. Which of the following commands would be used to open a file called "test.dat" sothat it's contents could be read into memory ?

   (a) open=infile("test.dat","r")

   (b) infile=open("test.dat","w")

   (c) infile = open("test.dat","r")

   (d) open=infile("test.dat"',"w")

11. Which of the following is a document class in LaTeX

   (a) article

   (b) title

   (c) section

   (d) amsmath

12. LaTeXcommand to get $\sqrt[3]{2}$ is ...

   (a) `\sqrt(3)(2)` (b) `\sqrt[3]{2}` (c) `\sqrt[2]{3}` (d) `\sqrt{2}{3}`

Part B : Answer all questions $(9 \times 1 = 9weightage)$

13. How can you swap the values of two variables a and b in python without using a third variable

14. What is the output of the following program

```
lst = [1,2,3]
for n in lst:
    print "Python"*n
```

15. How do you find the value of $\sqrt{15}$ in python

16. What are exceptions in Python language? Give an example.

17. Write a python command to generate a 3×2 array filled with zeros

18. What is printed by the python code :

```
from pylab import *
x=linspace(1,1,4)
print x
```

19. What is the output of the python program:

```
from pylab import *
a=poly1d([3,4,5])
print a
print a(0.5)
```

20. What is printed out by the following LaTeXcommand :

```
$\frac{\partial^2 f}{\partial x^2}$
```

21. Typeset $\int_0^\pi sinxdx$

   Part C : Answer any 5 questions $(5 \times 2 = 10 weightage)$

22. If $a = [1, 2, [3, 4], 5]$, what is the length of a? What does $a[-len(a)]$ evaluate to ? How do you delete 2 and insert 6 at the end of the list

23. Write a python program to print the multiplication table of 12 using while loop

24. Translate the following while loop into a for loop
   (which does the same as the while loop)

```
i=20
while(i>0):
    print i
    i=i-2
    if(i==10):
        continue
```

25. Write a python code to solve the set of equations:

$$4x + y + z = 4$$

$$x + 4y - 2z = 4$$

$$3x + 2y - 4z = 6$$

26. Write a python program to open a file and write "University of Calicut" to it.

27. Write a python program to plot the astroid

$$x = a cos^3(t), y = a sin^3(t)$$

28. Write a LATEXcode to generate the following table.

No.	Name	Age
1	Raju	17
2	Seena	18
3	Vinu	18

Part D : Answer any 2 questions $(2 \times 4 = 8 weightage)$

29. Write a python code to define a function called GCD to find the greatest common divisor of two integers a and b.Using this function,define another function called LCM to find the least common multiple of two integers p and q.Then write the code to find the least common muliple of 5 and 6.

30. Write a python program to find a root of the quadratic quation

$$2x^2 - 3x - 5 = 0$$

around 4,using Newton-Raphson method

31. Write LATEXcode to generate the following question paper.

II B.Sc.(Mathematics)MODEL EXAMINATION,MAR.2011
DIFFERENTIAL AND INTEGRAL CALCULUS
Answer all questions

(1)Evaluate the integral

$$\int_0^1 \frac{x}{x^2 + 1} dx$$

(2)Differentiate the following function w.r.t. x:

$$cos(x^2)$$

(3)Find

$$\lim_{x \to 1} (5x^2 + 3x + 1)$$