

MODEL QUESTION PAPER-2
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. Who created the Python programming language

- (a) Richard Stallman
- (b) Guido von Rossum
- (c) Bill Gates
- (d) Apache

2. What gets printed :

```
name='my college'
```

```
name[2]='X'
```

```
print name
```

- (a) my college
- (b) myXcollege
- (c) myXollege
- (d) error,the code will not run

3. Cosider the following code:

```
print (1,2,3)*2
```

What does this print?

- (a) (2,4,6)
- (b) 12
- (c) (1,2,3,1,2,3)
- (d) none of the above

4. Study the code below :

```
x,y=1,3
```

```
print x/y
```

In python, print x/y prints out 0,which is not correct.

Which of the solutions below will fix this?

- (a) use `print float(x/y)` instead
 - (b) use `print float(x)/y` instead
 - (c) use `print float(x./y.)` instead
 - (d) use `print float(x//y)` instead
5. How do you get the real part of a complex number `z` in python?
- (a) `real.z`
 - (b) `z.real`
 - (c) `real(z)`
 - (d) `z(real)`
6. Which line of code will add a new element 10 to the end of the following list:
`lst=[0,2,[4,6],8]`
- (a) `lst.insrt(10)`
 - (b) `lst += 10`
 - (c) `lst.append(10)`
 - (d) `lst.add(10)`
7. Study the code below:
- ```
x=eval(input("Enter an integer :"))
if(<condition>):
 print " x is an even integer"
```
- To check for even integers what should the condition be like ?
- (a) `x%2==1`
  - (b) `x%2=1`
  - (c) `x%2==0`
  - (d) `x%2=0`
8. What is the out put of the following python code?  
`print len((1,2,3,(4,5,6),7,8))`
- (a) 8
  - (b) 7

- (c) 6
- (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=a*b
print c
```

- (a) 11
  - (b) [3,8]
  - (c) 24
  - (d) Error
10. Which of the following commands is to be used to open a file called "test.dat" in the write mode
- (a) `open=infile("test.dat","r")`
  - (b) `infile=open("test.dat","w")`
  - (c) `outfile = open("test.dat","r")`
  - (d) `open=infile("test.dat","w")`
11. Which of the following is not document class in  $\text{\LaTeX}$
- (a) article
  - (b) letter
  - (c) section
  - (d) report
12.  $\text{\LaTeX}$  command to get  $A \neq B$  is ...
- (a)  $\$A \neq B\$$
  - (b)  $\$A \neq B \$$
  - (c)  $\$A \neq B \$$
  - (d)  $\$ A = 'B$

**Part B : Answer all questions ( $9 \times 1 = 9\text{weightage}$ )**

13. If `a = "university"` , what does `a[-len(a)]` evaluate to?

14. Write a python code to print powers of 2 upto 1024 using a for loop.(only two lines of code).
15. How do you find the value of  $15^{\frac{2}{3}}$  in python
16. What is printed by the by the python code:

```
x="University\nof\nCalicut"
print x
```

17. Write a python code to plot a circle of radius 20 using the polar() function.
18. Write a python command to generate a  $2 \times 3$  array filled with ones.
19. What is printed by the python code :

```
from pylab import *
x=linspace(0,1,5)
print x
```

20. What is printed out by the following L<sup>A</sup>T<sub>E</sub>Xcommand :

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

21. Typeset  $\int_0^\pi \sin x dx$

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

22. Write a python program to print Fibonacci numbers upto 100, without using multiple assignment statement.
23. Write a python program to print the multiplication table of 10 using for loop
24. Write a python program to find annual compound interest.  
Get P,N and R from user
25. Write a python code to solve the set of equations:

$$4x + y - 2z = 0$$

$$2x - 3y + 3z = 9$$

$$-6x - 2y + z = 0$$

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 L<sup>A</sup>T<sub>E</sub>Xcode to generate the following list.

- Degree
  - B.Com.
  - B.A.
  - B.Sc.
    - \* Mathematics
    - \* Physics
- PG
  - M.A.
  - M.Com.

**Part D : Answer any 2 questions (2 × 4 = 8weightage)**

29. Write a python code to execute the following operations

- (a) Define the list  $a = [123, 12.4, 'haha', 33.4, 17, 65.2]$
- (b) Print all members using a for loop
- (c) Print float type members using  $type()$  function
- (d) Insert 89 after 33.4
- (e) Append 77.7 at the end of the list

30. Write a python program to find a root of the equation

$$\cos(x) = 0$$

between 1.5 and 2, using Newton-Raphson method

31. Write L<sup>A</sup>T<sub>E</sub>Xcode to generate the following question paper.

**II B.Sc.(Mathematics)MODEL EXAMINATION,MAR.2011  
INFORMATICS  
Answer all questions**

1. Plot the following curves. ( $3 \times 2 = 6weightage$ )

(a) The circle  $x^2 + y^2 = 5^2$

(b) The astroid  $x = a\cos^3(\theta), y = a\sin^3(\theta)$

(c) The catenary  $y = a.\cosh(x/a)$

2. Typeset the following. ( $4 \times 1 = 4weightage$ )

(a)  $\int \sin(x)dx$

(b)  $\sqrt{3^2 + 4^2}$

(c)  $n! = 1 \cdot 2 \cdots (n - 1) \cdot n$

(d)  $\alpha, \beta, \gamma$

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