MINOR ASSIGNMENT-2

Q1. What will be the output produced by each of the following function calls?

Ans :- a) math.ceil(65.65)
66

b) math.ceil(65.47)
66

c) math.fabs(-67.58)
67.58

d) math.fabs(3)
3.0

e) math.exp(2.7)
14.879731..

f) math.log(45,2)
5.491853...

g) math.log10(1000)
3.0

h) math.pow(4, 1/2)
2.0

i) math.sqrt(121)
11.0

j) math.radians(30)
0.52359877

k) math.degrees(math.pi/2)
90.0

Q.2 Give the range in which the value of variable x may lie on execution of following statements:

```
import random
x= random.random()+5
```

Range = $\boxed{5.0 \leq x < 6.0}$

Q.3 Evaluate the following expressions using Python shell. Assume that ASCII coding scheme is used for character data.

a. abs(-5.4)

Ans 5.4

b. abs(15)

Ans 15

c. chr(72)
Ans- H

d. round(-24.9)
Ans -25

e. float(57)
Ans 57.0

f. complex('1+2j')
Ans (1+2j)

g. divmod(5,2)
Ans (2,1)

h. float(57)
Ans 57.0

i. pow(9,2)
Ans 81

j. max(97,88,60)
Ans 97

k. min(55,29,99)
Ans 29

l. max('a','b','AB')
Ans b

Q.4 Consider the following function:

```
def nMultiple(a=0, num=1)
    return a*num
```

What will be the output produced when the following calls are made?

a. nMultiple(5)

Ans:- 5

b. nMultiple(5,6)

Ans 30

c. nMultiple(num=7)

Ans 0

d. nMultiple(num=6, a=5)

Ans 30

e. nMultiple(5, num=6)

Ans 30

Q.5 Develop Python functions to produce the following outputs:

a)

```
        *
    *   *   *
*   *   *   *   *
    *   *   *
        *
```

Ans
```
def star1():
    print("    *")

def star2():
    print("  *  *  *")

def star3():
    print("* * * * *")

star1()
star2()
star3()
star2()
star1()
```

b)

```
$ $ $ $ $
$       $
$       $
$       $
$ $ $ $ $
```

Ans

```
def len():
    print("$ $ $ $ $")

def bre():
    print("$       $")
    print("$       $")
    print("$       $")

len()
bre()
len()
```

Q.6 Study the program segments given below. Give the output produced, if any.

a)

```
def test(a,b):
    a = a+b
    b = a-b
    a = a-b
    print('a=',a)
    print('b=',b)
test(5,8)
```

Output

a=8
b=5

b)

```
def func():
    pass
a = func()
print(a)
```

Output

None.

Q.7 Write a function areaTriangle that takes the lengths of three sides : side1, side2 and side3 of the triangle as the input parameters and returns the area of the triangle as the output. Also, assert that sum of the length of any two sides is greater than the third side. Write a function main that accepts inputs from the user interactively and computes the area of the triangle using the function areaTriangle.

Ans

```
import math
def areaTriangle(a,b,c):
    s=(a+b+c)/2
    area= math.sqrt((s*(s-a)*(s-b)*(s-c)))
    return area;
a= float(input("Enter side a: "))
b= float(input("Enter side b: "))
c= float(input("Enter side c: "))
print(areaTriangle(a,b,c))
```

Output

```
Enter side a: 10
Enter side b: 5
Enter side c: 8
19.81003533
```

Q.8 Write a function to print the table of entered number.

Ans
```
def table(n):
    print(n, "* 1 =", n*1)
    print(n, "* 2 =", n*2)
    print(n, "* 3 =", n*3)
    print(n, "* 4 =", n*4)
    print(n, "* 5 =", n*5)
    print(n, "* 6 =", n*6)
    print(n, "* 7 =", n*7)
    print(n, "* 8 =", n*8)
    print(n, "* 9 =", n*9)
    print(n, "* 10 =", n*10)
n = int(input("Enter n:"))
table(n)
```

Output :-

```
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50
```

Q.9 Study the program segments given below. Give the output produced, if any:

a)
```
def say (message, times=2):
    print (message * times)
say ('Hello')
say ('World', 5)
```

Output

HelloHello
WorldWorldWorldWorldWorld

b)
```
def fun (a=2, b=3, c=7):
    d= a+b+c
    print (d)
print (fun(2))
```

Output

12
None

Q.10 Find the sum of even digits of a four-digit number using function.

Ans
```
def sum_even_digits (number):
    if number == 0:
        return 0
    last_digit = number % 10
    if last_digit % 2 == 0:
        return last_digit + sum_even_digits (number // 10)
```

```
    else:
        return sum_even_digits(number//10)

num = int(input("Enter a four-digit number:"))
if (1000 <= num <= 9999):
    result = sum_even_digits(num)
    print("Sum of even digits:", result)
else:
    print("Please enter a valid four-digit number")
```

Output

```
Enter a four-digit number: 3421
Sum of even digits: 6
```

Q.11. Using a function evaluate the value of the arithmetic expression taken from the user.

Ans

```
def func(e):
    result = eval(e)
    return result

exp = input("Enter an arithmetic expression:")
result = func(exp)
print("Result:", result)
```

Output

```
Enter an arithmetic expression: 45-12+8
Result: 41
```

Q.12 What does a function return by default in Python? Define a function that doesnot return any value, store the function call in a variable and check the value of that variable.

Ans In Python, a function that doesnot explicitly return a value using the 'return' statement will by default return 'None'. 'None' is a special Python object that represents the absence of a value or a null value.

```
def func():
    pass

result = func()
print ("Value of 'result':", result)
```

Output

Value of 'result' : None

Q.13 Write a function which takes coordinates of three points as input and returns true if points are collinear and returns false otherwise.

Ans
```
def collinear (x1, y1, x2, y2, x3, y3):
    a = x1*(y2-y3) + x2*(y3-y1) + x3 (y1-y2)
    if (a==0):
        return (True)
    else:
        return (False)
```

```
x1, y1, x2, y2, x3, y3 = float(input("Enter x1:")),
                         float(input("Enter y1:")),
                         float(input("Enter x2:")),
                         float(input("Enter y2:")),
                         float(input("Enter x3:")),
                         float(input("Enter y3:"))
print(collinear(x1, y1, x2, y2, x3, y3))
```

Output :-

```
Enter x1: 2
Enter y1: 4
Enter x2: 3
Enter y2: 5
Enter x3: 4
Enter y3: 6
True.
```

Q.14 Write a function named as 'Uppercase' which converts the lowercase alphabet to Upper case alphabet. Also, assert that the entered alphabet by user is valid lowercase alphabet. Write a function main that accepts input from the user interactively and converts the lowercase alphabet to uppercase using the function 'UpperCase'.

Ans

```
def UpperCase(str):
    assert str.islower()
    print(str.upper())
if __name__ == '__main__':
    UpperCase(input("Enter lowercase alphabet :"))
```

Output :-

Enter lowercase alphabet : vivek

VIVEK

Q.15 Observe carefully the below function

```
def fun(a=0, b=1):
    return(a**2 + b**2)
```

a) fun(2, a=3) :- Type Error : fun() got multiple values for argument 'a'

b) fun(b=3, 2) :- Syntax Error : positional argument follows keyword argument.

c) fun(3, b=2) :- Output
13

d) fun(a=4, 5) :- Syntax Error : positional argument follows keyword argument.

Q.16 What will be the output of the following Python code?

```
x = -5
def display(x):
    print(x)
    x=5
    print(x)
display(x)
print(x)
```

Output
-5
5
-5

Q.17 What will be the output of the following Python code?

```
>>> int('89.67')
```

Output

ValueError : invalid literal for int() with base 10: '89.67'

Q.18 Create the following scripts importedModule and mainModule in the working directory, execute the script mainModule and justify the output.

importedModule.py

```
def test1():
    print('test1 in imported module')

def test2():
    print('test2 in imported module')

test1()
test2()
```

mainModule.py

```
import importedModule
print('Hello')
```

Output

```
test1 in imported module
test2 in imported module
```
→ Executed from importedModule script

```
hello
```
→ Executed from mainModule script.