POSSESSION OF MOBILE IN EXAMINATION IS UFM PRACTICE

Name of Student ---------- Enrolment No. ----------
Department ----------

BENNETT UNIVERSITY, GREATER NOIDA
Mid-Term Examination, Fall SEMESTER 2018-19

COURSE CODE: ECSE103L/ECSE101L MAX. DURATION: One HOUR
COURSE NAME: Computational Thinking Using Programming
COURSE CREDIT: 5 MAX. MARKS: 20

Note:

- All the questions are compulsory.
- Please write precisely and neatly. Please make clear diagram wherever required.

Q1. Multiple choice question **6*0.5= 3 Marks**

1.1 Which is the correct way to define a variable?

a. 1var
b. var#
c. third variable
d. None of above

1.2 In which place "in" operator used as membership operator?

a. for loop
b. while loop
c. if condition
d. both a and b
e. both b and c

1.3 Left shift and right shift operators work on which data type?

a. int
b. float
c. Both int and float
d. None of above

1.4 Which line of code will throw error

L1. str='hello students'
L2. lst = ['h', 'e','l','l','o']
L3. str[0]='d'
L4. lst[0]='d'

a. line 1
b. line 2
c. line 3
d. line 4
e. program will not throw any error

1.5 What will be the output of the following line of code?

```
my_list = ['p','r','o','b','e']
print(my_list[-4:4])
```

a. [,'r','o','b']
b. [,'r','o']
c. Error
d. No output

1.6 What is the result of following expression?

120%10*211+168<<3 and 44

a. 21
b. 44
c. 4
d. None of above

Q2. Which of the following program is the most efficient program? Explain why. **2 Marks**

A

```
x = 225
flag = True
count=0
for i in range(2,x):
    count +=1
    if(x%i==0):
        flag = False
if(flag):
    print("Number is Prime")
else:
    print("Number is not prime")
```

B

```
x=225
flag = True
count=0
for i in range(2,(x//2 +1)):
    count +=1
    if(x%i==0):
        flag = False
if(flag):
    print("Number is Prime")
else:
    print("Number is not prime")
```

C

```
x=225
flag = True
count=0
y = int(math.sqrt(x))+1
for i in range(2,y):
    count +=1
    if(x%i==0):
        flag = False
if(flag):
    print("Number is Prime")
else:
    print("Number is not prime")
```

D

```
x=225
flag = True
count =0
y = int(math.sqrt(x))+1
for i in range(2,y):
    count +=1
    if(x%i==0):
        flag = False
        break
if(flag):
    print("Number is Prime")
else:
    print("Number is not prime")
```

Q3. Make a flow chart to find given number is perfect or not. In number theory, a perfect number is a positive integer that is equal to the sum of its proper positive divisors, that is, the sum of its positive divisors excluding the number itself. The first perfect number is 6. Its proper divisors are 1, 2, and 3, and 1 + 2 + 3 = 6. The next perfect number is 28: 28 = 1 + 2 + 4 + 7 + 14. **3 Marks**

Q4. Find the output of the following code and give a reason (one line). **6*1= 6 Marks**

A
```
def fun():
    for i in range(10):
        if i == 9:
            break
    else:
        print i
    return i
i=2
print(fun())
```

B
```
j=1
for i in range(4,j,-1):
    print(i)
    i=j/3
print(i<<2)
```

C
```
def fun():
    while(n):
        n=n//2
        print(n)

n=5
fun()
```

D
```
def recursion(fun):
    if(fun==5**4):
        return 0
    return 1+recursion(fun*5)

print(recursion(5))
```

E
```
i=5
while(i>=1):
    j=i+4
    for j in range(j,10,1):
        print(i,end="")
    print("")
    i-=1
```

F
```
nw =''
for x in "Mid Term 1":
        nw=x+nw
print(nw)
```

Q5. Write a program to input a floating-point number and count the number of digits after decimal point and print their sum.

Example: if n = 12.5643, output should be: Number of digits after decimal= 4, Sum=18.

3 Marks

Q6. Define a **recursive function** to calculate the Binomial coefficient C(n,k). The formula is:

$C(n, k) = C(n-1, k-1) + C(n-1, k)$

$C(n, 0) = C(n, n) = 1$

For example, if input is C(5,2), output should be 10. **3 Marks**