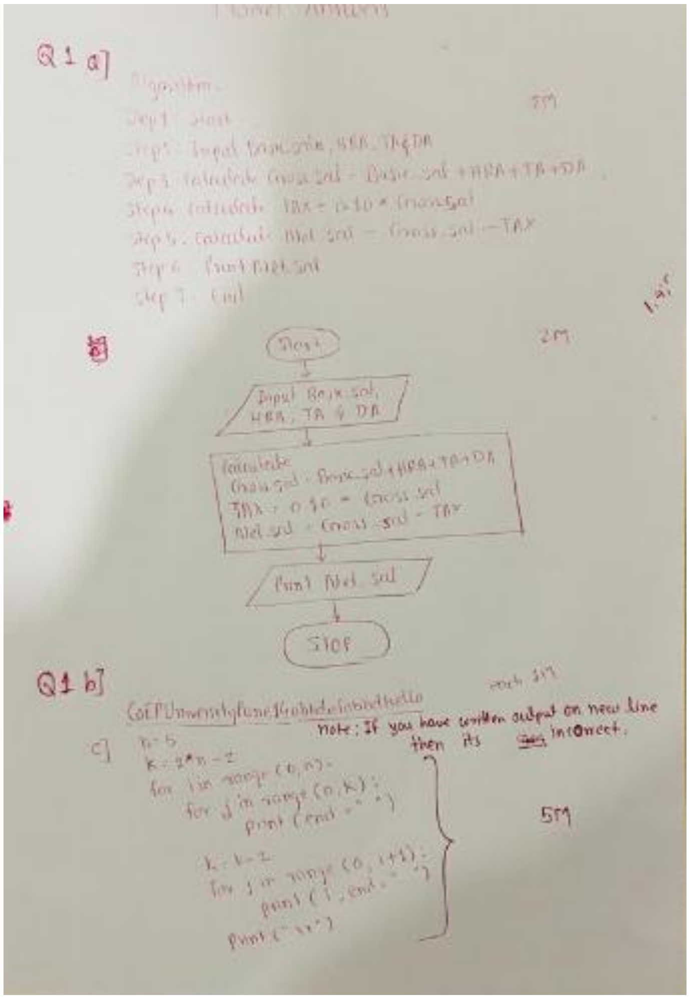
PPS End Sem Exam Aug-Sept 2022 Solution

Q 1



Model Answers

Q 1 a]

```
Algorithm
Step 1 Start
Step 2 Input Basic sal, HRA, TA & DA
Step 3 Calculate Gross sal = Basic sal + HRA + TA + DA
Step 4 Calculate TAX = 0.10 * Gross sal
Step 5 Calculate Net sal = Gross sal - TAX
Step 6 Print Net sal
Step 7 End
```

3M

2M

Start
Input Basic sal, HRA, TA & DA
Calculate
Gross sal = Basic sal + HRA + TA + DA
TAX = 0.10 * Gross sal
Net sal = Gross sal - TAX
Print Net sal
STOP

Q1 b]

CoEPUniversity[illegible]hello

each 1M

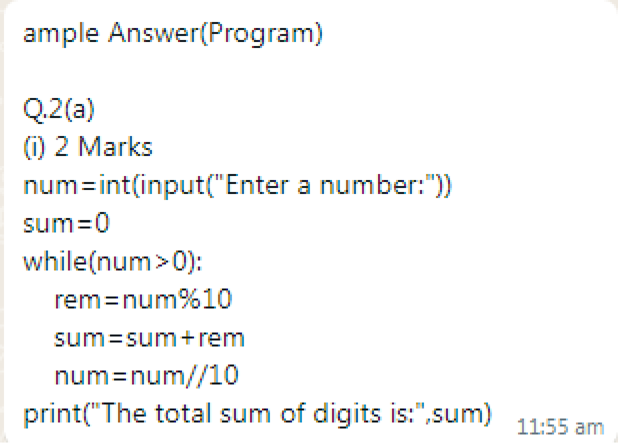
note: If you have written output on new line then its ~~[illegible]~~ incorrect.

c]

```
n=5
k=2*n-2
for i in range(0,n):
    for j in range(0,k):
        print(end=" ")
    k=k-2
    for j in range(0,i+1):
        print(1,end=" ")
    print("\r")
```

5M

Q 2



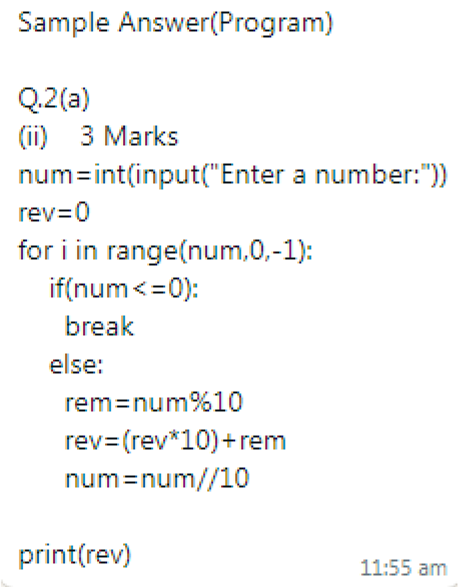
ample Answer(Program)

Q.2(a)

(i) 2 Marks

```
num=int(input("Enter a number:"))
sum=0
while(num>0):
   rem=num%10
   sum=sum+rem
   num=num//10
print("The total sum of digits is:",sum)
```

11:55 am



Sample Answer(Program)

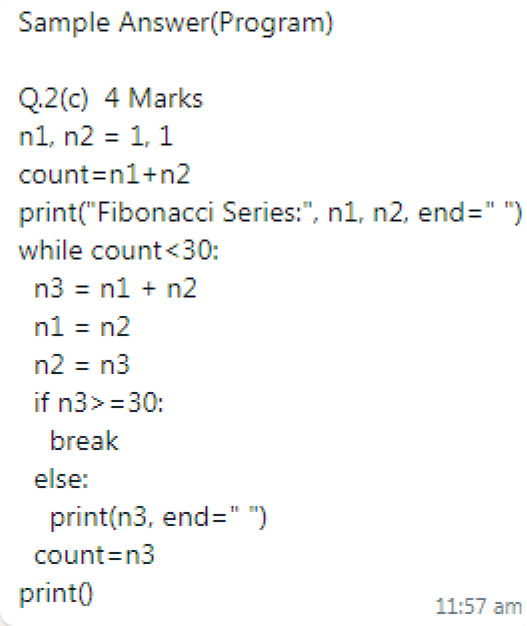
Q.2(a)
(ii)   3 Marks

```
num=int(input("Enter a number:"))
rev=0
for i in range(num,0,-1):
  if(num<=0):
   break
  else:
   rem=num%10
   rev=(rev*10)+rem
   num=num//10

print(rev)
```

11:55 am

For and While Loop Difference 4



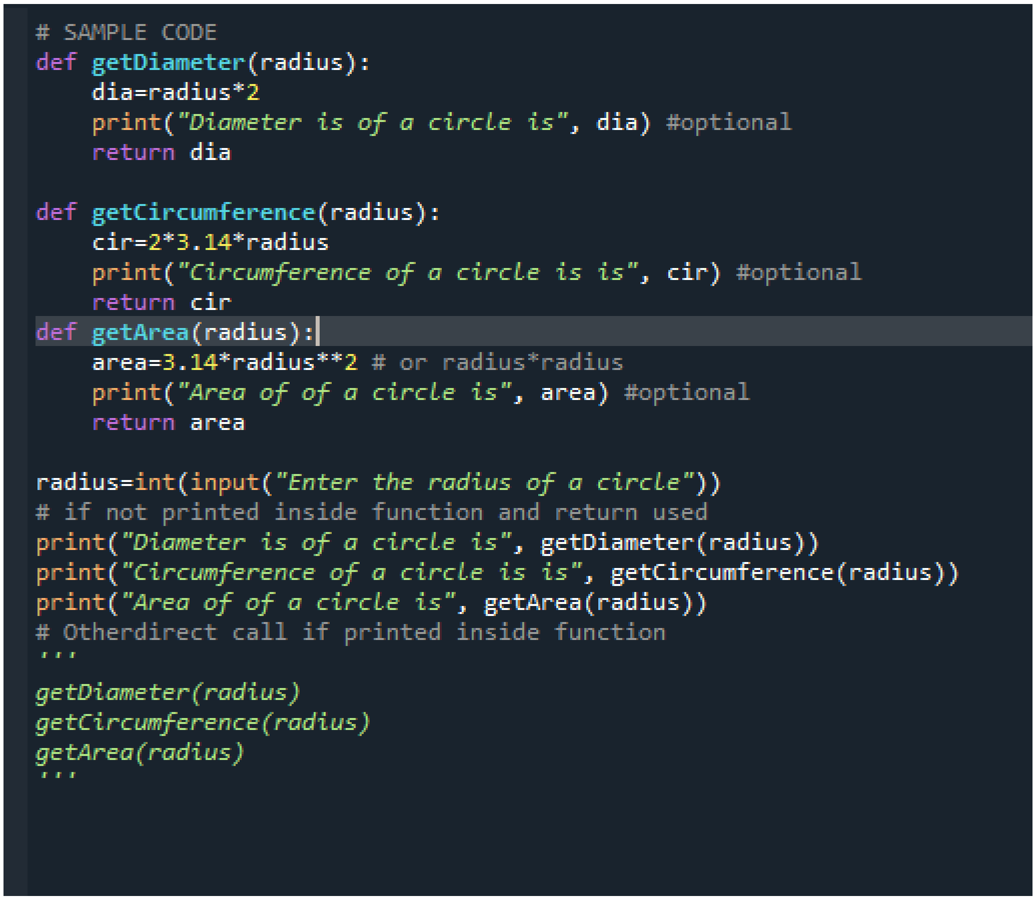
Sample Answer(Program)

Q.2(c) 4 Marks

```
n1, n2 = 1, 1
count=n1+n2
print("Fibonacci Series:", n1, n2, end=" ")
while count<30:
 n3 = n1 + n2
 n1 = n2
 n2 = n3
 if n3>=30:
  break
 else:
  print(n3, end=" ")
 count=n3
print()
```

11:57 am

Q 3   a)   4



```python
# SAMPLE CODE
def getDiameter(radius):
    dia=radius*2
    print("Diameter is of a circle is", dia) #optional
    return dia

def getCircumference(radius):
    cir=2*3.14*radius
    print("Circumference of a circle is is", cir) #optional
    return cir
def getArea(radius):
    area=3.14*radius**2 # or radius*radius
    print("Area of of a circle is", area) #optional
    return area

radius=int(input("Enter the radius of a circle"))
# if not printed inside function and return used
print("Diameter is of a circle is", getDiameter(radius))
print("Circumference of a circle is is", getCircumference(radius))
print("Area of of a circle is", getArea(radius))
# Otherdirect call if printed inside function
'''
getDiameter(radius)
getCircumference(radius)
getArea(radius)
'''
```

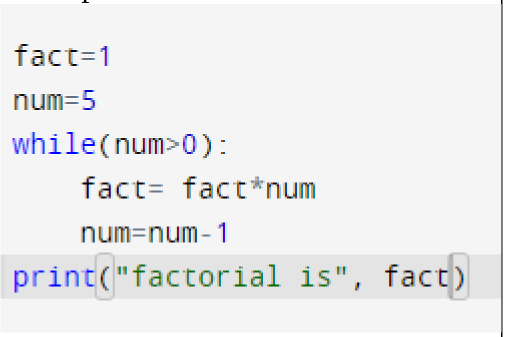
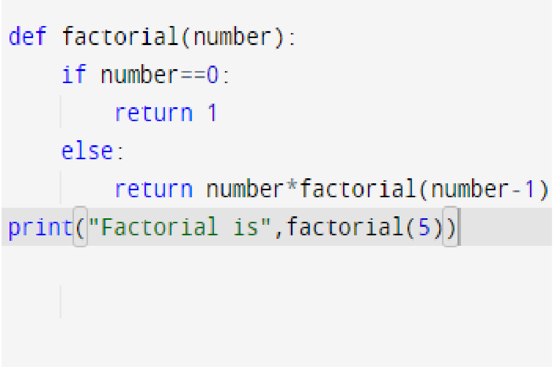
(NEED TO USE ONLY PROVIVED FUNCTION DECLARATIONS with variable name as "radius" only)

b)

Iteration	**Recursion**
In Iteration, there is the usage of loops to execute the set of instructions repetitively until the condition of the iteration statement becomes false.	Recursion is a process of calling a function itself within its own code.
It is comparatively faster than recursion.	It is slower than iteration because of the overhead of maintaining of the stack.
It has a larger code size than recursion.	Recursion code is shorter than iterative code; however, it is difficult to understand.
The termination in iteration happens when the condition of the loop fails.	During defining the recursion, one must define an exit condition carefully; otherwise, it will go to an infinite loop. So, it is important to impose a termination condition of recursion.
Infinite iteration due to mistake in iterator assignment or increment, or in the terminating condition, will lead to infinite loops, which may or may	In Recursion, Infinite recursive calls may occur due to some mistake in specifying the base condition, which on never becoming false, keeps calling the

5

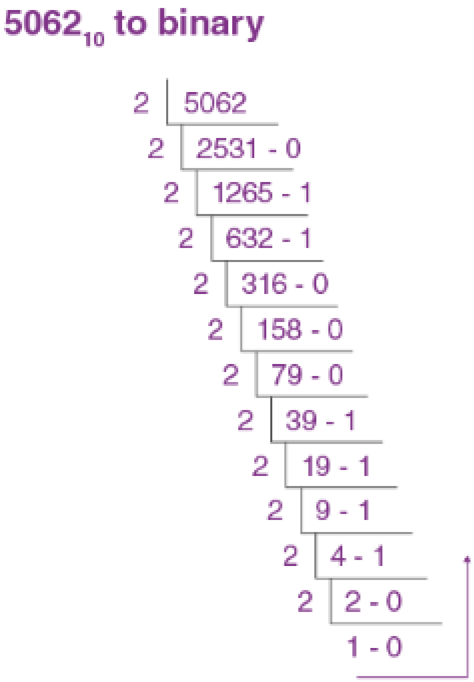
not lead to system errors, but will surely stop program execution any further.	function, which may lead to system CPU crash.
Iteration is simple as compare to recursion.	Recursion is complex as compare to iteration.

Following (Sample valid program) example of calculating factorial of a number using iteration will prove the above points:

`fact=1`
`num=5`
`while(num>0):`
`     fact= fact*num`
`     num=num-1`
`print("factorial is", fact)`
	Following (Sample valid program) example of calculating factorial of a number using recursion will prove the above points:
	
	`def factorial(number):`
	`    if number==0:`
	`        return 1`
	`    else:`
	`        return number*factorial(number-1)`
	`print("Factorial is",factorial(5))`

(Program need to be complete one and correct one. Expected 4-5 valid points on each side with SAME example using iteration and recursion)

c) Number Conversion System asked with all the steps so no marks to direct solutions.

i) $5062_{10} = 1001111000110_{2}$.



5062_{10} to binary

2 | 5062

2 | 2531 - 0

2 | 1265 - 1

2 | 632 - 1

2 | 316 - 0

2 | 158 - 0

2 | 79 - 0

2 | 39 - 1

2 | 19 - 1

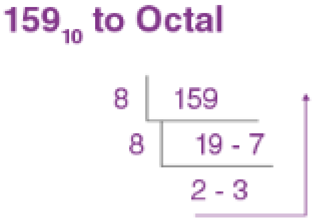
2 | 9 - 1

2 | 4 - 1

2 | 2 - 0

1 - 0

ii) $159_{10} = 237_{8}$



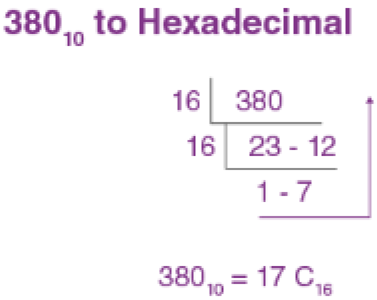
159_{10} to Octal

8 | 159

8 | 19 - 7

2 - 3

iii) $380_{10} = 17C_{16}$.


380_{10} to Hexadecimal

$380_{10} = 17\ C_{16}$

iv) $11001011_2 = (1 \times 2^7) + (1 \times 2^6) + (0 \times 2^5) + (0 \times 2^4) + (1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (1 \times 2^0)$

$11001011_2 = 128 + 64 + 0 + 0 + 8 + 0 + 2 + 1$

$11001011_2 = 203_{10}$.

v) $714_8 = (7 \times 8^2) + (1 \times 8^1) + (4 \times 8^0)$

$714_8 = (7 \times 64) + (1 \times 8) + (4 \times 1)$

$714_8 = 448 + 8 + 4$

$714_8 = 460_{10}$

(No partial marks awarded for this questions)