1. What is the output of the following code fragment?

```
c = 0
for i in range(15):
   if i%2 == 0:
      c = c + 2
   elif i % 3 == 0:
      c = c + 3
      break
   else:
      i = i + 1
print(c)
```

   1) 5
   2) 7
   3) 8
   4) 10
   5) 11

2. Which is the correct Python code fragment to represent the following mathematical equation?

$$y = 3 + \sum_{i=1}^{N} \frac{4(-1)^{i+1}}{(2i)(2i+1)(2i+2)}$$

   1)

```
y = 3
for i in range(0,N):
  if i % 2 == 0 :
    y = y+4/(2*i+2)/(2*i+3)/(2*i+4)
  else :
    y = y-4/(2*2)/(2*i+3)/(2*i+4)
print(y)
```

   2)

```
y = 3
for i in range(1,N):
  x = 2*i
  y = y+4*(-1)**(i+1)/((x)*(x+1)*(x+2))
print(y)
```

   3)

```
y = 3
i = 1
while i <= N:
  y = y+4*(-1)**(i+1)/(2*i)/(2*i+1)
      /(2*i+2)
print(y)
```

   4)

```
y = 3
i = 1
while i <= N:
  x = 2*i
  y = y-4*(-1)**(i)/((x)*(x+1)*(x+2))
print(y)
```

   5)

```
y = sum([4*(-1)**(i+1)//(2*2)/(2*i+3)
    /(2*i+4) for i in range(N)])+3
print(y)
```

3. What is the result of the following code fragment?

```
a = 0
cnt = 0
while -10 <= a <= 10:
   cnt = cnt + 1
   if a % 5 == 1:
      a = a * 2
   elif a % 3 == 2:
      a = a + 5
   elif a % 2 == 0:
      a = a – 4
   a = a - 1
print(cnt)
```

   1) 3
   2) 4
   3) 5
   4) 6
   5) The code fragment produces an infinite loop.

4. What is the result of the following code fragment?

```
def func(x,y) :
   cnt = len(y)
   if len(x) < len(y):
      cnt = len(x)
   for i in range(cnt):
      x[i] = x[i] + y[i]

# main begins here
x = [1,2,3,4]
func(x,[5,6,7])
print(x)
```

   1) `[6, 8, 10, 4]`
   2) `[1, 2, 3, 4]`
   3) `[4, 3, 2, 1]`
   4) The code fragment produces a syntax error.
   5) `IndexError: list assignment index out of range`

5. What is the result of the following code fragment?

```
res = 0
for i in range(2):
   for j in range(i+1):
      y = (i+j)%3
      if i < j:
         i = y
      elif j < i:
         j = y
      res = res + (i*j)
print(res)
```

   1) 1
   2) 2
   3) 3
   4) 4
   5) The above code produces an infinite loop.

6. Which code fragment cannot produce a list `[1,3,5,7,9,11]` ?
   1) `[x for x in range(1,12,2)]`
   2) `[x for x in range(1,13,2)]`
   3) `[x-1 for x in range(2,14,2)]`
   4) `[2*x+1 for x in range(6)]`
   5) `[2*(x-1) for x in range(1,7)]`

7. Which choice displays the different output?

1)
```
for i in range(1,14,2):
   print(i)
```

2)
```
for i in range(1,8):
   print(i*2-1)
```

3)
```
for i in range(1,20,2):
   print(i)
   if i >= 14:
      break
```

4)
```
i = 1
while i <= 13:
   print(i)
   i = i+2
```

5)
```
i = 1
while True:
   if i > 13:
      break
   print(i)
   i = i+2
```

8. The following code fragment asks a user to enter numbers until **-1**. All those numbers are kept into a list for later calculating the average value. Which choice should be filled into the blanks **(A)** and **(B)**?

```
numbers = []
n = input("Number (-1 exit): ")
n = float(n)
while ___(A)___:
   numbers.append(n)
   n = input("Number (-1 exit): ")
   n = float(n)
avg = ___(B)___
print(f"Average value is {avg}")
```

1)
```
A: n != -1
B: sum(numbers)/len(numbers)
```

2)
```
A: n != -1
B: sum(numbers)/(len(numbers)-1)
```

3)
```
A: n == -1
B: sum(numbers)/len(numbers)
```

4)
```
A: n == -1
B: sum(numbers)/(len(numbers)-1)
```

5)
```
A: n == 1
B: sum(numbers)/len(numbers)
```

9. Which line in the code fragment may cause an error?

```
1: while True:
2:    n = float(input(
          'Enter your phone number: '))
3:    if n == '':
4:       break
5:    if n%13 == 0:
6:       print('You are lucky.')
```

   1) line 1
   2) line 2
   3) line 3
   4) line 4
   5) line 5

10. Which choice produces a list of 1, 4, 9, 16, ..., 100?
   1) `[i for i in range(1,100,i)]`
   2) `[i for i in range(1,100,2*i-1)]`
   3) `[i+(2*i+1) for i in range(0,10)]`
   4) `[i**2 for i in range(1,10)]`
   5) `[(i+1)**2 for i in range(10)]`

11. Given the input file "**mylist.txt**" containing the integer numbers:

```
1
4
2
8
```

Which choice should be filled into the blank **(A)** to make the code fragment calculate the summation of all numbers contained in the file?

```
___(A)___

file = open('mylist.txt')
data = file.read()
lines = data.splitlines()
total = sum_list(lines)
print(total)
```

1)
```
def sum_list(lines):
   return sum(lines)
```

2)
```
def sum_list(lines):
   return sum([int(x) for x in lines])
```

3)
```
def sum_list(lines):
   for data in lines:
      total = total + int(data)
   return total
```

4)
```
def sum_list(lines):
   total,i = 0,0
   while i<len(lines):
      total = total + int(lines[i])
   return total
```

5) Choices 2, 3, and 4 are correct.

12. Which code fragment causes an infinite loop?

1)
```
fah = 0
end = 100
while fah < end:
   cel = (5/9)*(fah-32)
   print(f"{fah:12.2f}{cel:12.2f}")
```

2)
```
fah = 0
end = 100
while fah > end:
   cel = (5/9)*(fah-32)
   print(f"{fah:12.2f}{cel:12.2f}")
```

3)
```
end = 100
for fah in range(0,end,10):
   cel = (5/9)*(fah-32)
   print(f"{fah:12.2f}{cel:12.2f}")
```

4)
```
end = 100
for fah in range(0,end,-10):
   cel = (5/9)*(fah-32)
   print(f"{fah:12.2f}{cel:12.2f}")
```

5) Choices 1, 2 and 4 produce the infinite loop.

13. What is the output of the following code fragment?

```
text = "I love Python"
lst = [i for i in range(len(text))
         if text[i] == "o"]
print(sum(lst))
```

1) 3
2) 11
3) 14
4) 16
5) None of the above since an error occurs.

14. Which choice should be filled into the blank **(A)** to make the code fragment print all members of the list **seq** in the reverse order?

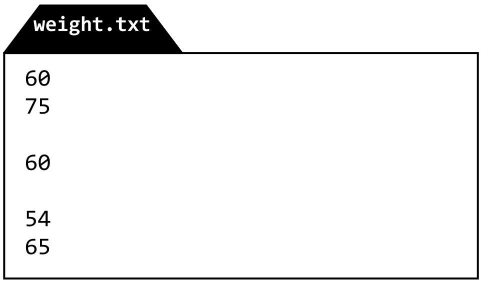
```
seq = [1,4,10,16,25,67,99]
for i in range(___(A)___):
   print(seq[i])
```

1) `len(seq)-1,-1,-1`
2) `len(seq)-1,-1`
3) `len(seq),-1,-1`
4) `len(seq),-1`
5) `len(seq)-1,1,-1`

15. Which of the following choices is NOT a Python keyword?

1) `import`
2) `and`
3) `break`
4) `true`
5) `while`

16. File **weight.txt** is given as follows:



```
weight.txt
60
75

60

54
65
```

What is the output of the following code fragment?

```
data = open("weight.txt").read()
data = data.splitlines()
data2 = [x for x in data if x != ""]
print(data2[2]+data2[-1])
```

1) 65
2) 6065
3) 125
4) 0+65
5) 7565

17. What is the output of the following code fragment?

```
print("I''love programming")#'me'
```

1) `I''loveprogramming#'me'`
2) `I'love programming`
3) `#'me'`
4) `I''love programming`
5) `"I''love programming"`

18. What is the output of the following code fragment?

```
msg = "Keep calm and carry on.,"
mlist = msg.split(" ")
mlen = [len(x) for x in mlist]
mlen = [x for x in mlen if x%2 == 0]
print(sum(mlen))
```

1) 12
2) 16
3) 20
4) 24
5) There is an error.

19. What Python expression is equivalent to the following formula?

$$m(1-x)^k$$

1) `m*(1-x)**k`
2) `m*(1-x)^k`
3) `m(1-x)^k`
4) `m(1-x)**k`
5) None of the above choices is correct.

20. How many times line 6 is executed when the code fragment runs?

```
1: n = 1
2: j = 0
3: while (n<5):
4:    n = n+1
5:    for m in range(n):
6:       j = j+2
7: print(j)
```

1) `10`
2) `11`
3) `14`
4) `15`
5) `28`

21. What is the output of the following code fragment?

```
L = [[3,  9, 10, 17],
     [19, 5, 25, 13]]
def M(N):
   m = N[0][0]
   for n in range(len(N)):
      for k in N[n]:
         if m < k:
            m = k
   return m
print(M(L))
```

1) `3`
2) `5`
3) `9`
4) `19`
5) `25`

22. What is the output of the following code fragment?

```
mytxt = "rrrbbrb"
k = [x for x in mytxt]
b = [2 for x in k if x == "b"]
r = [3 for x in mytxt if x == "r"]
print(sum(b)+sum(r))
```

1) `6`
2) `12`
3) `18`
4) `24`
5) There is an error.

23. Which one displays different output from the others?

1)
```
a = [x/2 for x in range(9,99,9)]
print(len(a))
```

2)
```
b = [x+2 for x in range(20)
         if x%2==0]
print(len(b))
```

3)
```
c = [x-2 for x in range(1,10)]
print(len(c))
```

4)
```
d = [x*2 for x in range(1000)
         if 79>x and 68<x]
print(len(d))
```

5) All of the above code fragments display the same output.

24. When filling into the blank `(A)`, which choice makes the following code fragment cause an error?

```
mylist = ___(A)___
for i in mylist:
   print(i)
```

1) `'0123456789'`
2) `list(range(50,10,5))`
3) `sum(x for x in range(10))`
4) `[1,2,'3','-4','ku','eng']`
5) None of the above choices causes an error.

25. What is the output of the following code fragment?

```
def is_prime(x):
   c = 2
   while c < x:
      if x % c == 0:
         return False
      c = c + 1
   return True

def last_prime(x):
   for i in range(x,1,-1):
      if is_prime(i):
         return i
   return 0

sum_t = 0
for x in range(7):
   sum_t = sum_t + last_prime(x)
print(sum_t)
```

1) `8`
2) `12`
3) `13`
4) `18`
5) `32`

26. What is the output of the following code fragment?

```
import numpy as np
x = np.array([3,4,5,6])
x = x+2
y = x-1
print(x[1]+y[2]+x[3])
```

1) `10`
2) `13`
3) `15`
4) `18`
5) `20`

27. Which choice is the correct definition of the function `sum_odd(x,y)` so that the code fragment below can calculate summation of odd number(s) between `x` and `y` (including `x` and `y`)?

```
x = 13
y = 25
total = sum_odd(x,y)
print(total)
```

1)
```
def sum_odd(m,n):
   t_sum = 0
   for x in range(m,n):
      if x%2 != 0:
         t_sum = t_sum + x
   return t_sum
```

2)
```
def sum_odd(m,n):
   t_sum = 0
   for x in range(n,m,-1):
      if x%2 == 1:
         t_sum = t_sum + x
   return t_sum
```

3)
```
def sum_odd(m,n):
   t_sum = 0
   count = 0
   while True:
      if count+m == n:
         break
      else:
         count = count + 1
      if (count+m)%2 != 0:
         t_sum = t_sum + count + m
   return t_sum
```

4)
```
def sum_odd(m,n):
   t_sum = 0
   count = m
   while (count <= n):
      if count%2 == 1:
         t_sum = t_sum + count
      count = count + 1
   return t_sum
```

5)
```
def sum_odd(m,n):
  return (sum(m,n) if n%2==1)
```

Use the following code fragment and its sample output to answer the next 2 questions.

```
import numpy as num
d = ___(A)___
weight = d.T[0]
height = d.T[1]
print(height/100)
print(weight*2.2)
```

Sample output:

```
[1.53 1.87 1.72]
[140.8 165.  149.6]
```

28. Which choice should be put into the blank `(A)` to make the code fragment be able to compile and run properly without any error?

1) `open('data.txt').read().split(',')`
2) `open('data.txt').read().splitlines()`
3) `num.loadtxt('data.txt',delimiter=',')`
4) `num.loadtxt('data.txt')`
5) None of the above choices is correct.

29. Which contents of the file `data.txt` will give the result as shown in the sample output?

1)
```
64,153
75,187
68,172
```

2)
```
153,64
187,75
172,68
```

3)
```
153,187,172
64,75,68
```

4)
```
64,75,68
153,187,172
```

5) All of the above choices are correct.

30. To get the following output

```
xxxxxxxxx
-xxxxxxx
--xxxxx
---xxx
----x
```

what should be filled in the blank `(A)`?

```
for i in range(5):
   num_x = ___(A)___
   num_dash = i
   print("-"*num_dash + "x"*num_x)
```

1) `i`
2) `(2*i)+1`
3) `(2*i)-1`
4) `9+(2*i)`
5) `9-(2*i)`

31. From the code fragment below, how many times the word **morning** gets printed?

```
for c in "Good":
   print("morning")
```

1) 0
2) 1
3) 2
4) 3
5) 4

32. Which code fragment, after executed, gives in a different final value of **n** from the others?

1)
```
for n in range(10):
   print("Goodbye")
```

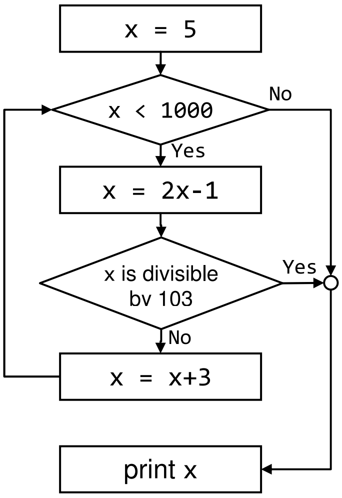
2)
```
for n in range(1,10):
   print("Hello")
```

3)
```
for n in range(1,11,2):
   print("Hi")
```

4)
```
n = 1
while n < 11:
   print("Ok")
   n = n+2
```

5)
```
n = 0
while n < 9:
   print("Thanks")
   n = n+1
```

Use the following flowchart to answer the next 2 questions.



33. Which causes the loop to stop?

1) When **x** is less than **1000**.
2) When **x** is greater than or equal to **1000**.
3) When **x** is divisible by **103**.
4) Both 1) and 3) are correct.
5) Both 2) and 3) are correct.

34. Which code fragment corresponds to the flowchart?

1)
```
x = 5
while True:
   if x < 1000:
      break
   x = 2*x-1
   if x%103 == 0:
      break
   x = x+5
print(x)
```

2)
```
x = 5
while x < 1000:
   x = 2*x-1
   if x%103 == 0:
      break
   x = x+5
print(x)
```

3)
```
x = 5
while x < 1000:
   x = 2*x-1
   if x%103 != 0:
      break
   x = x+5
print(x)
```

4)
```
x = 5
while x < 1000:
   x = 2*x-1
   if x%103 == 0:
      break
x = x+5
print(x)
```

5)
```
x = 5
while x < 1000:
   x = 2*x-1
   if x%103 == 0:
      break
   x = x+5
   print(x)
```

35. Given a 2D array **G** where each row contains a pair of *<grade point,credits>* as shown:

```
import numpy as np
G = np.array([
    [3.5, 3],  # grade B+, 3 credits
    [2.0, 1],  # grade C, 1 credit
    [4.0, 3],  # grade A, 3 credits
    [2.5, 2],  # grade C+, 2 credits
    [0.0, 1],  # grade F, 1 credit
    [1.5, 4]   # grade D+, 4 credits
    ])
```

Which expression correctly computes the GPA of the grades above.

1) `(G[0]*G[1])/G[1]`
2) `(G.T[0]*G.T[1])/G.T[1]`
3) `sum(G[0]*G[1])/sum(G[1])`
4) `sum(G.T[0]*G.T[1])/sum(G.T[1])`
5) `sum(G.T[0])*sum(G.T[1])/sum(G.T[1])`

36. What is the content of the file `data.txt` to give the shell output as shown:

```
>>> import numpy as np
>>> A = np.loadtxt('data.txt',delimiter=',')
>>> A.shape
(4,5)
>>> A[0]
array([5., 3., 1., 8., 9.])
>>> A[1]
array([3., 6., 1., 2., 0.])
>>> A.T[0]
array([5., 3., 8., 1.])
>>> A.T[1]
array([3., 6., 9., 1.])
>>> sum(A[2])
31.0
>>> max(A[3]) - min(A[3])
0.0
```

1)
```
5,3,1,8,9
3,6,1,2,0
8,9,7,7,0
1,1,1,1,1
```

2)
```
5,3,8,1
3,6,9,1
1,1,7,1
8,2,7,1
9,0,0,1
```

3)
```
5,3,1,8,9
3,6,1,2,0
8,9,4,5,5
1,1,1,1,1
```

4)
```
5,3,1,8,9
3,6,1,2,0
8,9,1,9,4
0,0,0,0,0
```

5) Both 1) and 3) are correct.

<u>Use the code fragment below to answer the following 2 questions.</u>

```
L = [[ 1, 2, 3, 4, 5],
     [ 6, 7, 8, 9,10],
     [11,12,13,14,15],
     [16,17,18,19,20],
     [21,22,23,24,25]]

L1 = [L[i][i] for i in range(5)]
```

37. What is the value of `L[4][3]`?

1) `14`
2) `18`
3) `20`
4) `24`
5) None of the above

38. What is the content of `L1` after executing the code fragment?

1) `[1,7,13,19,25]`
2) `[1,6,11,16,21]`
3) `[21,22,23,24,25]`
4) `[1,2,3,4,5]`
5) `[21,17,13,9,5]`

39. What is the output of the following code fragment?

```
x = [12, 65, 54, 39, 102, 339, 221]
result = [x[i] for i in range(len(x))
               if x[i]%13 == 0]
print(result)
```

1) `[1, 3, 6]`
2) `[12, 65, 54]`
3) `[13]`
4) `[65, 39, 221]`
5) None of the above choices is correct.

40. Which choice is the correct definition of function `factors(x)` that finds the factors of `x` so that the code fragment below can work properly?

```
num = int(input('Enter a number: '))
print("The factors of",num,"are:")
print(factors(num))
```

1)
```
def factors(x):
   f = []
   for i in range(1,x):
      if x%i == 0:
         f.append(i)
   return(f)
```

2)
```
def factors(x):
   f = []
   for i in range(1,x+1):
      if x%i == 0:
         f.append(x[i])
   return(f)
```

3)
```
def factors(x):
   f = []
   for i in range(1,x+1):
      if x%i == 0:
         f.append(i)
   return(f)
```

4)
```
def factors(x):
   f = []
   for i in range(1,x+1):
     if x%i == 0:
        f[i] = x
   return(f)
```

5) None of the above choices is correct.

41. Which is the output of the following code fragment?

```
def decrement(a,b):
   a = a-b
num = 100
dec = 20
decrement(num,dec)
print(num)
```

1) `80`
2) `100`
3) `200`
4) Compilation error
5) None of the above choices is correct.

42. Which is the correct code fragment for separating numbers into two lists of odd and even numbers and display the results as shown below?

```
[2, 4, 6] [1, 3, 5]
```

1)
```
num = [1,2,3,4,5,6]
for i in range(len(num)):
   if num[i]%2 == 0:
      e.append(num[i])
   else:
      o.append(num[i])
print(e,o)
```

2)
```
num = [1,2,3,4,5,6]
e = []
o = []
for i in range(len(num)):
   if num[i]//2 == 0:
      e.append(num[i])
   else:
      o.append(num[i])
print(e,o)
```

3)
```
num = [1,2,3,4,5,6]
e = []
o = []
for i in range(len(num+1)):
   if num[i]%2 == 0:
      e.append(num[i])
   else:
      o.append(num[i])
print(e,o)
```

4)
```
num = [1,2,3,4,5,6]
e = []
o = []
for i in range(len(num)):
   if num[i]%2 == 0:
      e.append(num[i])
   else:
      o.append(num[i])
print(e,o)
```

5) No correct answer

<u>To answer the following 2 questions, consider the array "**table**" defined below</u>

```
>>> table
array([[ 1,  2,  3,  4],
       [ 5,  6,  7,  8],
       [ 9, 10, 11, 12],
       [13, 14, 15, 16]])
```

43. Which is the correct command to display the number of elements in the array?

1) `print(len(table))`
2) `print(table.size)`
3) `print(table.shape)`
4) `print(table.ndim)`
5) Both 1) and 2) are correct.

44. Which is the correct output of the following code fragment?

```
for x in table.T[1]:
   print(x,end=' ')
```

1) `1 2 3 4`
2) `1 5 9 13`
3) `2 6 10 14`
4) `14 10 6 2`
5) None of the above answers is correct.

45. Which is the objective of the following code fragment?

```
n = int(input())
sum = 0
for i in range(1,n+1):
   sum = sum+i
print(sum)
```

1) Print the summation of numbers from `1` to `n+1`
2) Print the summation of numbers from `1` to `n`
3) Print the summation of numbers from `0` to `n`
4) Print the numbers from `1` to `n+1`
5) No correct answer

46. Which is the output of the following code fragment?

```
n = 10
while True:
   n = n//2
   if n == 0:
      break
   print(n,end=';')
```

1) Infinite iterations: it will never stop because it's a forever Loop.
2) No output displayed
3) `5;2;1;`
4)
```
5;
2;
1;
```
5) Compilation error

Use the following code fragment to answer the next 3 questions.

```
def foo(x):
   if x > 0:
      if x%3 != 0 and x%7 == 0:
         print("A")
      else:
         print("B")
   elif x%2 != 0 and x%5 == 0:
      print("C")
   else:
      print("D")
```

47. Which value of x to be passed to the function foo() to print “B” to the screen?

1) -5
2) -1
3) 1
4) 7
5) None of the above choices is correct.

48. Which value of x to be passed to the function foo() to print “C” to the screen?

1) -5
2) -1
3) 1
4) 7
5) None of the above choices is correct.

49. Which value of x to be passed to the function foo() to print “D” to the screen?

1) -5
2) -1
3) 1
4) 7
5) None of the above choices is correct.

50. What should be filled in the blank (A) so that the code fragment prints “Pto sectn” to the screen?

```
msg = "Python is exciting"
out = ""
for i in ___(A)___:
   out = out+msg[i]
print(out)
```

1) msg
2) range(msg)
3) range(len(msg),2)
4) range(0,len(msg),2)
5) Both 3) and 4) are correct.

51. What is the output of the following code fragment?

```
i = 1
while True:
   if i%2 == 0:
      break
   print(i)
i = i+2
```

1) 1
2) 1 2
3) 1 2 3 4 5 6
4) 1 3 5 7 9 11
5) None of the above choices is correct.

52. What is the output of the following code fragment?

```
arr = [1, 2, 3, 4, 5, 6]
for i in range(1,6):
   arr[i-1] = arr[i]
for i in range(0,6):
   print(arr[i],end=" ")
```

1) 1 2 3 4 5 6
2) 2 3 4 5 6 1
3) 1 1 2 3 4 5
4) 2 3 4 5 6 6
5) None of the above choices is correct.

Use the following code fragment to answer the next 2 questions.

```
a_list = ["Happy", [2,0,1,5]]
```

53. What is the result of the following command?

```
>>> print(a_list[0][1])
```

1) Happy
2) H
3) a
4) 0
5) 5

54. What is the result of the following command?

```
>>> print(a_list[1][3])
```

1) Happy
2) H
3) a
4) 0
5) 5

55. Suppose `A` is an array using NumPy, which one is NOT the property of `A` that we can use?
    1) `A.len`
    2) `A.ndim`
    3) `A.shape`
    4) `A.size`
    5) All of the above is the property of an array in NumPy.

56. Technically, based on what we learned in class, a "string" is a list of characters. Consider the following assignments:

(i)
```
str = 'Zimba'
```
and

(ii)
```
str = ['Z', 'i', 'm', 'b', 'a']
```

Also, consider the following code fragments:

A:
```
for i in range(len(str)):
   print(i)
```

B:
```
print(str)
```

C:
```
str[0] = 'P'
str[1] = 'u'
print(str)
```

D:
```
for c in str:
   print(c,end="")
```

Which ones give different results when using `(i)` and `(ii)`?
1) `A`
2) `A` and `B`
3) `B` and `C`
4) `B` and `D`
5) `A`, `B`, `C`, and `D`

57. Consider the following code fragment, which choice gives the value of `10`?

```
import numpy as np
a = np.array([[ 1,  2,  3,  4],
              [ 5,  6,  7,  8],
              [ 9, 10, 11, 12],
              [13, 14, 15, 16]])
```

1) `print(a[2][1])`
2)
```
b = a[2]
print(b[1])
```
3) `print(a[-2][-3])`
4) `print(a[2-len(a[0])][1])`
5) All of the above is correct.

58. Which one will make an error when putting it in the blank `(A)`?

```
count = 0
for i in ___(A)___:
   count = count+1
```

1) `[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]`
2) `range(10)`
3) `range(0, 5, 0.5)`
4) `range(20, 0, -2)`
5) `'0123456789'`

59. What is the result of the following code fragment?

```
a = [1, 2, 3, 4, 5, 6]
b = a
for i in range(len(b)):
   b[i] = b[i]-1
print(sum(a)-sum(b))
```

1) `0`
2) `5`
3) `6`
4) `15`
5) `21`

60. Which choice <u>incorrectly</u> computes the following value:

$$\sum_{i=1}^{10} i^2$$

1)
```
print(sum(range(11)**2))
```
2)
```
total = 0
for i in range(11):
   total = total + i**2
print(total)
```
3)
```
print(sum([x**2 for x in range(11)]))
```
4)
```
import numpy as np
a = np.array(range(1, 11))
print(sum(a**2))
```
5) All of the above is correct.