There are 25 multiple choice questions. Each one is worth 4 points.

Answer the questions on the bubble sheet given to you.

Only the answers on the bubble sheet will be counted.

The questions will be discarded.

Programmable calculators cannot be used.

This exam contains 19 pages (including this cover page)

Remember to fill in the following bubble card fields:

- Student ID: Use the 10 digit ID number on your student ID card. Do not use your social security number.

- Last Name and First Name

- Test/Quiz: 02, Course: 177

- Instructor: Your recitation TA’s last name. Find it in the table below:

- Section number: Your recitation section number. Find it in the table below:

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<th>TA</th>
<th>Recitation Section Number</th>
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<tr>
<td>R01</td>
<td>Thursday, 07:30 am-08:20 am</td>
<td>Rohit Bhatia</td>
<td>0001</td>
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<td>Ruby Tahboub</td>
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**Recitation Section Number:** ____________________

**Student Last Name:** ____________________

**Student First Name:** ____________________
1. What is the output of the following Python program?

```python
def myFunc(matrix):
    x = matrix[0][0]
    for i in range(len(matrix)):
        for j in range(len(matrix[0])):
            if i == j and x < matrix[i][j]:
                x = matrix[i][j]
    print(x)

matrix = [[5, 0, 10, 20],
          [7, 0, 17, 3],
          [3, 4, 9, 15],
          [1, 2, 6, 11]]
myFunc(matrix)
```

A. 0
B. 1
C. 11
D. 17
E. 20
2. What is the output of the following Python program?

```python
try:
a = 1 / 0
except ZeroDivisionError:
    print("ZeroDiv")
except:
    print("DefaultExcep")
else:
    print("Else")
finally:
    print("Finally")
```

A. ZeroDiv
B. Else
C. DefaultExcep
D. ZeroDiv
    Finally
E. ZeroDiv
    DefaultExcep
    Finally
3. For which values of A, B and C does the following statement evaluate to False?

\[
\text{not ( A != C and B ) and not ( C == 1 or A == 2 )}
\]

A. A = 3
   B = False
   C = 4

B. A = 1
   B = False
   C = 2

C. A = 5
   B = True
   C = 5

D. A = 0
   B = False
   C = 2

E. A = 1
   B = False
   C = A
4. What is the output of the following Python program?

```python
def func(list):
    for i in range(4, -1, -1):
        list[i+1] = list[i]
    for i in range(len(list)):
        print(list[i], end=" ")

list = ['A', 'B', 'C', 'D', 'E', 'F']
func(list)
```

A. A B C D E F
B. A B C D E E
C. B C D E F F
D. A A B C D E
E. B B C D E F

5. What is the output of the following Python program?

```python
A=['abcde', 'fghij', 'klmno', 'pqrst', 'uvwxy']
print(A[2][1:])
```

A. fghij
B. k
C. l
D. lmo
E. f
6. Which of the following Python programs will result in an infinite loop?

I.

```python
i = 0
while i < 100:
    i = i + 10
    print(i)
```

II.

```python
i = 100
while i > 0:
    i = i + 10
    print(i)
```

III.

```python
i = 100
while i > 0:
    i = i - 10
    print(i)
```

IV.

```python
i = 1
while i <= 100:
    i = i + 10
    print(i)
```

A. I  
B. II  
C. III  
D. IV  
E. None of the above
7. What is the output of the following Python code?

```python
var = 0
i = 15
while (i > 1):
    var = var + i
    i = i - 6
print(i, var)
```

A. 3 27  
B. -3 27  
C. -3 21  
D. -3 33  
E. 3 33

---

8. How many times is j printed in the following Python program?

```python
for i in range(5):
    for j in range(i):
        print(j)
```

A. 1  
B. 3  
C. 6  
D. 10  
E. 15
9. What is the output of the following Python program?

```python
A=[[1,2,3],[4,5,6],[7,8,9]]
for i in range(len(A[0])):
    for j in range(len(A)):
        A[j][i] = -A[i][j]
print(A)
```

A. [[-1, -4, -7], [-2, -5, -8], [-3, -6, -9]]
B. [[-1, 2, 3], [4, -5, 6], [7, 8, -9]]
C. [[1, 2, 3], [4, 5, 6], [7, 8, 9]]
D. [[-1, 2, 3], [-2, -5, 6], [-3, -6, -9]]
E. [[3, 2, 1], [6, 5, 4], [9, 8, 7]]

10. What is the output of the following Python program?

```python
sumValue = 1
while sumValue < 50:
    sumValue = sumValue * 2
print(sumValue)
```

A. 16
B. 32
C. 64
D. 128
E. 256
11. What is the output of the following Python program?

```python
def myFunc(x):
    i = 0
    while i < len(x):
        if x[i] % 2 == 1:
            print(x[i])
            break
    i = i + 1

x = [0, 2, 3, 5, 6, 9]
myFunc(x)
```

A. 0  
B. 2  
C. 3  
D. 5  
E. 6

12. Which of the following statements are true:

A. If a break statement is reached in a nested loop, the current loop and all loops containing the current loop are exited.
B. If a break statement is reached in a loop, execution is continued immediately after the break statement.
C. **If a break statement is reached in a loop, the loop is exited.**
D. If a break statement is reached in a `for` loop, execution is continued with the next iteration of the for loop after incrementing the for loop index variable.
E. A break statement can exit from a function.
13. How many times is the print statement executed in the following program?

```python
for i in range(5):
    j = 0
    while True:
        if j > i:
            break;
        print(i*j)
    j = j + 1
```

A. 0  
B. 1  
C. 15  
D. 20  
E. 25

14. What is the output of the following Python program?

```python
def filter_numbers(numbers, n):
    results = []
    for number in numbers:
        if number % n:
            results.append(number)
    return results

def main():
    results = filter_numbers(range(0, 10), 2)
    print(results)

main()
```

A. [2, 4, 6, 8, 10]  
B. [0, 2, 4, 6, 8]  
C. [1, 3, 5, 7]  
D. [1, 3, 5, 7, 9]  
E. [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
15. What is the output of the following Python program?

```python
def search(numbers):
    found = False
    index = 0
    while index < len(numbers) and found == False:
        if (numbers[index]%2 == 0) and (numbers[index]%3 == 0):
            found = True
        else:
            index = index + 1
    return index, numbers[index]

print(search(range(2, 9)))
print(search(range(10, 16)))
```

A. (4, 6)  
   (2, 12)  
B. (3, 5)  
   (1, 12)  
C. (3, 5)  
   (2, 12)  
D. (4, 6)  
   (1, 12)  
E. (1, 3)  
   (5, 15)
16. What is the output of the following Python program?

```python
def mix(num, word):
    if word[2] == 'r':
        return 2 * num
    elif num > 10:
        return word + word
    elif word[0:2] == "CS":
        return 4 == 5

def main():
    print(mix(15, 'Purdue'))
    print(mix(10, 'CS177'))

main()
```

A. Purdue Purdue False
B. Purdue Purdue True
C. Purdue Purdue Purdue Purdue
D. 30 True
E. 30 False
17. What is the output of the following Python program?

```python
def Test(s):
    wordsList = s
    newS = ""
    for i in range(len(wordsList) - 1, -1, -1):
        if i > 0:
            newS = newS + wordsList[i]
        else:
            newS = newS + wordsList[i]
    return newS

def main():
    print(Test("Purdue"))
main()
```

A. Purdue
B. eudruP
C. eudru
D. urdue
E. udruP
18. What is the output of the following Python program?

```python
number = 25
isPrime = True
i = 2
while i < number and isPrime:
    if number % i == 0:
        isPrime = False
    i += 1
print("i is", i, "isPrime is", isPrime)
```

A. i is 5 isPrime is True
B. i is 5 isPrime is False
C. i is 2 isPrime is True
D. i is 6 isPrime is True
E. i is 6 isPrime is False

19. What is the output of the following Python program?

```python
def hcf(x, y):
    if x > y:
        smaller = y
    else:
        smaller = x

    for i in range(1, smaller + 1):
        if ((x % i == 0) and (y % i == 0)):
            hcf = i

    print(hcf)

def main():
    hcf(15, 35)

main()
```

A. 3
B. 4
C. 5
D. 9
E. 12
20. Which of the following Python program will print 'Woof woof!!' on the screen?

```python
class Dog:
    def __init__(self, name):
        self.name = name

    def bark(self):
        print('Woof woof!!')
```

A. `bark()`

B. `Dog().bark()`

C. `d = Dog('golden')`
   `d.bark()`

D. `d = Dog()`
   `d.bark()`

E. `d = Dog()`
   `d.bark(d)`
21. What is the output of the following Python program?

```python
class Car:
    def __init__(self, color, model):
        self.color = color
        self.model = model

    def update(self, color, model):
        color = color
        self.model = model

    def printCar(self):
        print('This is a ' + self.color + ' ' + self.model + '.')

car1 = Car('red', 'Ferrari')
car1.update('blue', 'Porsche')
car1.printCar()
```

A. **This is a red Porsche.**
B. This is a blue Porsche.
C. This is a red Ferrari.
D. This is a blue Ferrari.
E. Error

22. What is the output of the following Python program?

```python
class Account:
    def __init__(self, id):
        self.id = id
        id = 666
        id = self.id + id

acc = Account(123)
print(acc.id)
```

A. 0
B. **123**
C. 666
D. 789
E. Error
23. What is the output of the following Python program?

```python
class A:
    def __init__(self):
        print("In __init__")

    def getNumber(self, number, str):
        self.number = number + 1
        self.str = str.capitalize()
        return "INIT"

a = A()
var = getNumber(a, 10, "number")
print(var.number)
print(var.str)
```

A. The program does not run and gives an error straight away

B. The program first prints "In __init__" and then throws an error

C. The program gives NameError: number and str not defined

D. 11
   number

E. 11
   Number
24. Which of the following statements is correct for the following Python program (the intended behavior is that it prints the string "Welcome")?

class A:
    def __init__(self, s):
        self.s = s

    def myPrint(self):
        print(self.s)

a = A("Welcome")
a.myPrint()

A. The program doesn’t run as expected because class A does not have a constructor.
B. The output of the above program is "Welcome", that is, it runs as expected
C. The program doesn’t run as expected because class A should have the myPrint function defined as:

```python
    def myPrint(self, s):
        print(self+s)
```

D. The program doesn’t run as expected because class A should have the myPrint function defined as:

```python
    def myPrint(s):
        print(s)
```

E. The program doesn’t run as expected because class A should have the myPrint function defined as:

```python
    def myPrint(self):
        print(self.s)
```
25. What is the output of the following Python program?

```python
import random

def coinToss(number):
    heads = 0
    tails = 0
    for i in range(number):
        flip = random.randint(1,2)
        if (flip == 1):
            heads = heads + 1
        else:
            tails = tails + 1
    return heads, tails

def main():
    heads, tails = coinToss(10)
    print(heads)
    print(tails)

main()
```

A. 5
   5
B. 4
   6
C. 6
   4
D. 7
   3
E. Any of the above 4 outputs is possible