Q1. What is the value of array Z after executing the following code?

```python
X = "CS177"
Y = "Python"
Z = X[1:4]*2 + " " + Y[3:]
```

A. "S177S177 hon"
B. "S17S17 hon"
C. "CS1CS1 thon"
D. "CS17CS17 thon"
E. The code will produce an error.
Q2. What is the value of array B after executing the following code?

A = [13, 5, 7, 4, 1, 0, 3, 16]
B = []
n = len(A) // 2
for i in range(0, n):
    B.append(A[i] - A[n+i])
print(B)

A. B = []
B. B = [8, 3, 1, -13]
C. B = [12, 5, 4, -12]
D. B = [-3, 2, 7, 3]
E. The code will produce an error.
Q3. What does the following code print?

```python
for i in range(5):
    if i == 2:
        break
    print(i)
```

A. 0 1
B. 0 1 2
C. 0 1 2 3
D. 0 1 2 3 4
E. 0 1 3 4 5
Q4. The code below is supposed to calculate the average of two integers. Is there an error in this code? If so, what is the error?

```python
def average(a, b):
    return(a + b / 2)
```

A. Yes there is an error, “(a+b / 2)” should be “(a + b // 2)”.
B. Yes there is an error, you can't do math in a return statement.
C. Yes, there is a syntax error.
D. Yes there is an error, the average is computed incorrectly, as only b is divided by 2.
E. There is no error.
Q5. What is the value of a after the following code is executed?

```python
a = 30
if a < 30:
    a = a + 10
elif a == 30:
    a = a + 20
if a > 30:
    a = a + 30
print(a)
```

A. a = 50
B. a = 40
C. a = 30
D. a = 60
E. a = 80
Q6. Consider the following code. What is the output when the input for A is [1, 2, 3]?

```python
def SomeFunction(A):
    for i in range(0, len(A)):
        return A[i]
```

A. 1
B. 2
C. 3
D. 1
   2
   3
E. IndexError: list index out of range
Q7. Consider the following code. What is the output when the input for A is [1, 2, 3]?

```python
def SomeFunction(A):
    for i in range(0, len(A)):
        print(A[i])
```

A. 1
B. 2
C. 3
D. 1 2 3
E. IndexError: list index out of range
Q8. Two functions are the same if they produce the same output for any value of the input. The following functions have as input an integer parameter $x$.

<table>
<thead>
<tr>
<th>Function F1(x):</th>
<th>Function F2(x):</th>
<th>Function F3(x):</th>
</tr>
</thead>
<tbody>
<tr>
<td>if $x &gt; 0$:</td>
<td>if $x &gt; 0$:</td>
<td>if $x &gt; 0$:</td>
</tr>
<tr>
<td>print(&quot;Positive&quot;)</td>
<td>print(&quot;Positive&quot;)</td>
<td>print(&quot;Positive&quot;)</td>
</tr>
<tr>
<td>else:</td>
<td>elif $x &lt; 0$:</td>
<td>if $x &lt; 0$:</td>
</tr>
<tr>
<td>print(&quot;Negative&quot;)</td>
<td>print(&quot;Negative&quot;)</td>
<td>print(&quot;Negative&quot;)</td>
</tr>
</tbody>
</table>

A. Functions F1, F2, and F3 are all the same.

B. No two of the functions F1, F2, and F3 are the same.

C. Functions F2 and F3 are the same, but F1 is different.

D. Functions F1 and F2 are the same, but F3 is different.

E. Functions F1 and F3 are the same, but F2 is different.
This page was left blank intentionally
Q9. Two functions are the same if they produce the same output for any value of the input. The following functions have as input an array of integers A.

<table>
<thead>
<tr>
<th>def F1(A):</th>
<th>def F2(A):</th>
<th>def F3(A):</th>
</tr>
</thead>
<tbody>
<tr>
<td>for i in range(len(A)):</td>
<td>for a in A:</td>
<td>i=0</td>
</tr>
<tr>
<td>print(A[i])</td>
<td>print(a)</td>
<td>while i &lt; len(A):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>print(A[i])</td>
</tr>
<tr>
<td></td>
<td></td>
<td>i = i+1</td>
</tr>
</tbody>
</table>

A. Functions F1, F2, and F3 are all the same.
B. Functions F1 and F2 are the same, but F3 is different.
C. Functions F1 and F3 are the same, but F2 is different.
D. Functions F2 and F3 are the same, but F1 is different.
E. No two of the functions F1, F2, and F3 are the same.
This page was left blank intentionally.
Q10. Consider the following two code snippets:

    code#1:
    for i in range(10):
        print(i)

    code#2
    i = 0
    while i < 10:
        print(i)
        i = i + 2

Are they equivalent?

A) True

B) False
Q11. What will be the following function print?

```python
def SomeFunction():
    A = ['You ', 'Are ', 'Never ', 'Gonna ', 'Give ', 'Up ', 'CS ']
    print(s)
```

A. You Are Never Gonna Give Up CS

B. Never Gonna Give You Up

C. CS Never Give You Up

D. Never Gonna Let You Down

E. You Never Give Up CS
Q12. What will the following code print to the screen?

```python
a = 25
if(a>50):
    print(">50")
if(a < 100):
    print("<100")
elif(a>100):
    print(">100")
else:
    print("=100")
if(a<50):
    print("<50")
if(a>25):
    print(">25")
elif(a<25):
    print("<25")
else:
    print("=25")
```

A. 
<50
=25

B. 
>50
=25

C. 
<50
>25

D. 
<100
<50
=25

E. None of the above
Q13. Does the following code produce an “IndexError: list index out of range” error?

```
A = [3, 23, 2, 12, 73, 2, 42, 12, 63, 33, 21]
for i in range(13):
    print(A[i])
```

A. Yes

B. No
Q14. What will the following code output to the screen?

```
A = [3, 23, 2, 12, 73, 2, 42]
B = []
C = []
for i in range(len(A)):
    if(A[i]<20):
        B.append(A[i])
    else:
        C.append(A[i])
print(B)
print(C)
```

A. [3, 23, 2, 12, 73, 2, 42]

B. [3, 2, 12, 2]
   [23, 73, 42]

C. [23, 73, 42]
   [3, 2, 12]

D. It will not output anything

E. [0, 1, 2, 3, 4, 5, 6]
Q15. The following code attempts to write the string “test write” into the file test.txt. The code produces the error reported below. What went wrong?

```python
a = open("test.txt","r")
a.write("test write")
```

Error:
Traceback (most recent call last):
  File "<pyshell#19>" , line 1 , in <module>
    a.write("test")
  io.UnsupportedOperation: not writable

A. The file ‘test.txt’ did not exist, so it cannot be written to.
B. Python is not allowed to write to files.
C. The file was opened with the “r” option making it not writable.
D. a.write() is not a valid function
E. None of the above
Q16. Which of the statements below are true?

I. a for loop cannot be nested inside a while loop
II. while loops can run forever
III. for loops are best used when the number of iterations are known before hand
IV. break statements cannot be used in while loops
V. you can always replace a for loop with an equivalent while loop

A. V  
B. II, III, V  
C. I, III, V  
D. I, II, III  
E. I, IV, V
Q17. The following code gives an error:

```python
def Myfun(a,b):
    c='Class CS-177 '
    print(c + a + b)
Myfun('Spring: ' , 2013)
```

```
TypeError: Can't convert 'int' object to str implicitly
```

Modify a line to have the following output: 
Class CS-177  Spring: 2013

A. Line 4 should be: 
   ```python
   Myfun('Spring: ' + '2013')
   ```

B. Line 4 should be: 
   ```python
   Myfun( Spring: , 2013)
   ```

C. Line 3 should be: 
   ```python
   print('c' + 'a' + 'b')
   ```

D. Line 4 should be: 
   ```python
   Myfun('Spring: ', '2013')
   ```

E. Line 3 should be: 
   ```python
   print(c + a + 'b')
   ```
Q18. What is the output of the following code?

```python
M = 'Mississippi'
print (M + ' has: ' + M[2]*4)
```

A. Mississippi has: i4

B. **Mississippi has: ssss**

C. Mississippi has: iii

D. TypeError: Can't convert 'int' object to str implicitly

E. None of the above
Q19. The following 4 lines of code intend to print an array in reverse order. However, the code gives an error. How does the code need to be modified to work as intended?

```python
A=[1,2,3,4]  # line 1
n= len(A)    # line 2
for i in range(n):  # line 3
    print(A[n-i])  # line 4
```

*IndexError: List index out of range*

A. Line 3 should be: `for i in range(n-1):`
B. Line 4 should be: `print(A[n-i]-1)`
C. Line 3 should be: `for i in range(n-i):`
D. Line 4 should be: `print(A[n-1])`
E. Line 4 should be: `print(A[n-1-i])`
Q20. The following code for swapping the values of two variables `a` and `b` has a logical error.

```python
tmp = a    # line 1
b = tmp   # line 2
a = b     # line 3
```

How must the code be changed to work correctly?

A. Line 3 should be:  
   ```
a = tmp
```  

B. Line 1 should be:  
   ```
a = tmp
```  

C. Line 2 should be:  
   ```
tmp = b
```  

D. Line 2 should be:  
   ```
b = a
```  

E. Line 2 should be moved after line 3.
Q21. What is the output produced by the following code?

```python
x = 3
if 2 > x:
    print('First')
else:
    print('Second')
    if 2 > x:
        print('Third')
    print('Fourth')
print ('Fifth')
```

A. First
   Second
   Third
   Fourth
   Fifth

B. Second
   Fourth
   Fifth

C. First
   Fifth

D. Second
   Fourth

E. None of the above
Q22. Which is the value of the following Python expression?

\[ 2 \times 3^{3} \]

A. 18  
B. 216  
C. 1024  
D. 512  
E. 54

E. 54
Q23. What is the output of the following program?

```python
def fun(vals):
    newvals = []
    for val in vals:
        if (val < 0):
            newvals.append(val*val)
        else:
            newvals.append(val*2)
    return newvals

fun([-2, 2, 0, 3, -4])
```

A. [-4, 4, 0, 6, -8]

B. [4, 4, 0, 6, 16]

C. [4, 4, 0, 9, 16]

D. [2, 2, 0, 3, 4]

E. None of the above
Q24. Rearrange the following python statements to obtain a function that prints "A" if the score is above 90, "B" if the score is between 90 and 80, "C" if the score is between 80 and 70, and “not A, B, or C” otherwise.

```python
def Score2Grade(score):
    # line 1
    print("A")
    # line 2
    elif score >= 80:
        # line 3
        if score >= 90:
            # line 4
            print("C")
            # line 5
        elif score >= 70:
            # line 6
            print("B")
            # line 7
        else:
            # line 8
            print("not A, B, or C")
            # line 9
```

A. 1, 4, 3, 6, 8, 2, 5, 7, 9
B. 1, 2, 3, 4, 5, 6, 7, 8, 9
C. 1, 4, 2, 6, 5, 3, 7, 8, 9
D. 1, 4, 2, 3, 7, 6, 5, 8, 9
E. 1, 4, 2, 3, 6, 7, 5, 8, 9
Q25. What is the output of the function below when the input array A is [-2, 2, 5]?

```python
def Fun(A):
    for i in range(len(A)):
        print(A[A[i]])
```

A.  

2  
5  
IndexError: list index out of range  

B.  

-2  
2  
5  

C.  

IndexError: list index out of range  

D.  

-2  
2  
IndexError: list index out of range  

E. None of the above.