

University of Cape Town ~~ Department of Computer Science

Computer Science 1015F ~~ 2016

Supplementary Class Test 1

***** Solutions *****

Marks : 32

Time : 45 minutes

Instructions:

- a) Answer all questions.
- b) Write your answers in PEN or PENCIL by shading in the appropriate block on the answer sheet.
- c) Each question is worth 2 marks.
- d) All questions refer to version 3 of the Python programming language.

Question A - Basic Syntax

1. Which of the following is a valid identifier?

- a. 7793
- b. _someone
- c. maybe.not
- d. "Hello"
- e. 18MilesToMemphis

b

2. What is the output of the following statement?

```
print ("1\n", 2, "\n\"3", 4, end="\n", sep="\n")
```

- a. 1
"2"
"3"4"
- b. 1
2
"34"
- c. "1"
"2"
"34"
- d. 1 2 "3 4"
- e. 1 2
"3 4"

a

3. What is the value of the following expression?

```
1 % 2 + 3 // 4 - 5 * 6
```

- a. -1
- b. -24
- c. 0
- d. -29
- e. -27

d

Question B - Selection

4. What is the output of the following program?

```
x = 6
if x % 3 == 0:
    print (x % 2)
else:
    print (x % 2 + 1)
```

- a. 3
- b. 2
- c. 0
- d. 6
- e. (no output)

c

5. What is the output of the following program?

```
number_of_students = 177
if number_of_students > 150:
    print('a')
elif number_of_students > 170:
    print('b')
elif number_of_students > 200:
    print('c')
```

- a. a
- b. a
b
- c. a
b
c
- d. b
c
- e. b

a

6. What is the value of the following boolean expression?

(1>2 and 3<4) or (not 4>5 or 6<3) and 2>1

- a. 0
- b. 4
- c. and
- d. True

e. False

d

7. The following program uses nested if statements to sort 3 numbers. What is the missing line?

```
if a<b:
    if c<a:
        print ("c < a < b")
    else:
        # MISSING LINE
        print ("a < b < c")
    else:
        print ("a < c < b")
else:
    if c<b:
        print ("c < b < a")
    else:
        if a<c:
            print ("b < a < c")
        else:
            print ("b < c < a")
```

- a. if b<c:
- b. if c<b:
- c. if a<c:
- d. if a<b:
- e. if b<a:

a

8. What boolean expression is equivalent to the following for all values of a and b?

```
not (a) or not (b)
```

- a. not a and not b
- b. a or b
- c. not (a and b)
- d. a and b
- e. (a or b) and (b or a)

c

Question C - Iteration

9. What values are generated by this range function?

```
range (4,17,3)
```

- a. 4,5,6,7,8,9,10,11,12,13,14,15,16,17
- b. 3,4,5,6,7,8,9,10,11,12,13,14,15,16,17
- c. 4,7,10,13,16
- d. 17,14,11,8,5
- e. 4,7,10,13,16,17

c

10. What does the following program compute?

```
i = 1
j = 10
k = 0
while i<=j:
    if i % 2 == 0:
        k += i
    i+=1
```

- a. sum of numbers from i to j
- b. list of numbers from i to j
- c. list of numbers from i to k
- d. sum of even numbers from i to j
- e. sum of odd numbers from i to j

d

11. What is the missing line to complete this program so it only prints values of j that are divisible by 3?

```
for j in range(20):
    if j % 3 != 0:
        # MISSING LINE
    print(j)
```

- a. continue
- b. pass
- c. else
- d. break
- e. Not possible to print only numbers divisible by 3

a

12. What is the output of the following program?

```
for i in range (4):  
    for j in range(i):  
        print (j // 2, end='')
```

- a. 000012
- b. 001122
- c. 000112
- d. 000111
- e. 000001

e

13. What is the output of the following program?

```
for i in range (5):  
    for j in range (5-i):  
        print (" ",end="")  
    for k in range (5-i):  
        print ("*",end="")  
    print ()
```

a. *****

b. *
 **

c. *****

 *

d. *****

 **
 *

e. *****

* * *

* *

*

\bar{d}

Question D - Strings

14. What is the value of the following string expression?

```
"iamgroot!"[-2:-5:-2]
```

- a. 'too'
- b. '!ormi'
- c. 'oorgmai'
- d. 'to'
- e. 'tom'

d

15. What is the value of the following string expression?

```
("hello"[::-1][0]).upper () * 4
```

- a. (Error: Cannot multiply different types)
- b. 0
- c. 'OOOO'
- d. 'HHHH'
- e. 'O4'

c

16. The following program implements a simple cryptographic algorithm. What is the output?

```
a = "hello"
b = "abc"
c = ""
j = 0
k = ord ('a')-1
for i in range (len (a)):
    c += chr (((ord (a[i])-k + ord (b[j])-k) % 26) + k)
    j = (j + 1) % len (b)
print (c)
```

- a. igomq
- b. hfnlp
- c. ifmmn
- d. gdkkn
- e. ifmlo

a