University of Cape Town ~~ Department of Computer Science

Computer Science 1015F ~~ 2016

Class Test 1

*** Solutions ***

Marks : 30

Time : 45 minutes

Instructions:

a) Answer all questions.

b) Write your answers in PEN 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. What is the value of the variable c after executing the following Python program?

```
a=1
b=2
c=3.0
a=a+c
b=c-b
c=a/b
```

a. 2.0

b. 3

c. 3.0

d. 4

e. 4.0

e

2. What is the value of x at after executing the following expressions?

```
x = 5
x *= 12 + 4**3 // 10
```

a. 18

b. 90

c. 65

d. 35

e. 12

b

3. What is the output after executing the following statements?

```
x=10
y=5
z="Hello, it's me"

print(z, x, "\n", y, z,end='\\__/',sep='**')
```

a. Hello, it's me**10**

5Hello, it's me__/

b. Hello, it's me

10

5

Hello, it's me__/

c. Hello, it's me**5**

**10*Hello, it's me__/

d. Hello, it's me**10**

5Hello, it's me__/

e. Hello, it's me**10**

5Hello, it's me__/

d

3

Question B - Selection

4. The following program has a logic error. How will you fix it so it prints out a single correct result for any given mark?

```
if mark >= 75:
    print (1)
elif mark < 45:
    print ("Fail")
if mark < 50:
    print ("Supp")
else:
    print ("Pass")
```

a. change "mark >= 75" to "mark<75"

b. change the "else" to "elif mark>50:"

c. change the second "if" to "elif"

d. change the "elif" to "if"

e. use parentheses to ensure correct precedence in expressions

c

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

```
True and (False or (True and (False or not False)))
```

a. False

b. 0

c. True

d. 1

e. (Error: invalid expression)

c

6. The following program is supposed to check if a user has entered a correct and valid name/password pair to get access to Vula. Which statement IS NOT an error in the program?

```
if ((name="hussein" or password="123" and name="brian") or
(password="456"):
    print ("Welcome to Vula")
```

a. variables and string literals cannot be compared

b. comparison operators are incorrect

c. parentheses/brackets are in the wrong places

d. parentheses/brackets are missing

e. boolean operators (and/or) are incorrect

a

7. What is the output of the following program?

```
h_mark=78
b_mark=65
j_mark=82
if h_mark<b_mark:
    if b_mark<j_mark:
        print(b_mark)
    else:
        print(j_mark)
else:
    if j_mark<h_mark:
        print(j_mark)
    else:
        print(h_mark)
```

a. 78

b. 65

c. h_mark

d. b_mark

e. 82

a

8. What values for `user` and `password` would give the specified output?

```
real_password='password123'
real_user='admin'
if user==real_user:
    if password==real_password:
        print('logged in.')
    else:
        print('error', end='!\n')
else:
    print('error', end='.\n')
```

a. user='admin' password='password' … error.

b. user='admin' password='password123' … error!

c. user='brian' password='password123' … logged in.

d. user='admin' password='password123' … error.

e. user='brian' password='password' … error.

e

Question C - Iteration

9. What values are generated by this range function?

```
range (3, 7, 2)
```

a. 3, 5

b. 3, 5, 7

c. 3, 4, 5, 6

d. 3, 4, 5, 6, 7

e. 4, 6

a

10. What is the missing line to complete this program so it is not an infinite loop?

```
j=1
while j>0:
    j+=1
    print (j)
    if j==5:
        # MISSING LINE
```

a. continue

b. pass

c. else

d. break

e. terminate

d

11. What is the output of the following program?

```
for a in range (2):
    for b in range (2):
        for c in range (2):
            if (a+b+c) % 2 == 0:
                print (a,b,c,sep="",end=" ")
```

a. 111 112 121 122 211 212 221 222

b. 000011101110

c. 001010100111

d. 000 011 101 110

e. 000 001 010 011 100 101 110 111

d

12. What is the output of the following program?

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

a.
```
    *****
     *****
      *****
    *****
   *****
```

b. *
```
   **
   ***
   ****
   *****
```

c. *****
```
    ***
     *
    ***
   *****
```

d.
```
      ***
      ***
     ***
    ***
   ***
```

e. *****
```
   ****
    ***
     **
      *
```

c

13. What does the following program output?

```
i=10
while i>0:
    i-=1
    print(i//2,end='')
```

a. 4433221100

b. 43210

9

c. 4332211000

d. 01234

e. 0001122334

a

Question D - Strings

14. If a="#FeesMustFall", which of the following expressions does not generate "FMF"?

a. a[1]+a[5]+a[9]

b. a[-4::-4]

c. a[1:][0::4]

d. a[1:9:4]

e. a[1:5][0]+a[5:9][0]+a[9:13][0]

> *d*

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

```
a = "hello"
b = "abc"
c = ""
j = 0
k = ord ('a')
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

> *b*

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

```
(("I am gr"+"o"*4+"t!")*3)[5:13]
```

a. "I am grooot!I am grooot!I am grooot!"

b. "I am grooot!I am grooot!I am grooot!I am grooot!"

c. "grooot!grooot!grooot!"

d. "grooot!"

e. "I am grooot!*3"

> *d*