

**BRONX COMMUNITY COLLEGE**  
**of The City University of New York**

**DEPARTMENT OF MATHEMATICS and COMPUTER SCIENCE**

**CSI 33**

**Midterm Exam Sample/outline**

Programs must be sent to my e-mail : **natna20@gmail.com**. All other things are at your discretion: you can also send them via e-mail, or submit them in class. Note that everything must be submitted before you leave the class or the time is up.

1. (10 points) Answer True/False and Multiple Choice questions (5 questions)
2. (10 points) Given a program, find its asymptotic running time in theta-notation. see page 36/8 (it is from HW assignment)
3. (15 points) The integers 20, 12, 7, 14, 2, 5, 3 and 8 are inserted in that order into a container object. Give the order in which these values are retrieved, if the container is
  - (a) a stack,
  - (b) a queue.
4. (10 points) Give the output of the following program and a pictorial representation of the memory at the stages 1, 2, and 3. (see CSI33-lecture06.pdf for example)

```
def f1(a,b,c):  
    a.append(b)  
    a.append(c)  
    a = b+c  
    b += 10  
    print(a,b)  
    return a
```

```
def main():  
    x=[1]  
    y,z = 10,20  
    y = f1(x,y,z)  
    print(x,y,z)
```

5. (15 points) one question from recursion chapter (6), like trace `recPower(3,6)` and figure exactly how many multiplications it does (see p.214/4)
6. (15 points) Given a `class` write unit tests for some of its methods/functions.
7. (25 points) Programming assignment