

**Question 1**

Analyze the running time of the following program fragments assuming a RAM model of computation. State any assumptions or definitions you make.

a)

*i* = 0*while*(*i* <= 4)*print*(*i*)*i* = *i* + 1

b)

*i* = 0*while*(*i* <= 20)*print*(*i*)*i* = *i* + 8

c)

*i* = 0*while*(*i* < 4)*j* = 1*while*(*j* <= 3)*print*(*j*)*j* = *j* + 1*i* = *i* + 1

d)

*i* = 0*j* = 1*while*(*i* < 4)*print*(*i*)*while*(*j* <= 3)*print*(*j*)*j* = *j* + 1*i* = *i* + 1

e)

*j* = 1*while*(*j* <= 10)*j* = *j* + 1*a* = 1*while*(*a* <= 3)*a* = *a* + 1



