

**Quiz 21.1 – Radioactive Decay**

Name: \_\_\_\_\_

**Question 1**

$^{214}_{83}\text{Bi}$  will undergo both alpha decay and beta decay. Write a balanced equation for both of these decay pathways.

**Question 2**

What 2 different decay pathways can transform  $^{11}_{6}\text{C}$  into  $^{11}_{5}\text{B}$ ?

**Question 3**

How could we experimentally determine which decay pathway is actually responsible for the transformation in Question 2?

**Question 4**

A nuclide is relatively small and has too many neutrons to be stable. What method of decay is most likely for this nuclide?

**Question 5**

Calculate the half-life of an isotope if a sample is reduced to 60% of its original mass after 8 years

**Question 6**

A radioactive isotope has a half-life of 3.45 *years*. If a 15.0 *g* sample of this isotope is left in a closet for 10 *years*, how many *g* of the isotope will remain?

### *Wild Geese*

By Mary Oliver

You do not have to be good.  
You do not have to walk on your knees  
for a hundred miles through the desert repenting.  
You only have to let the soft animal of your body  
love what it loves.  
Tell me about despair, yours, and I will tell you mine.  
Meanwhile the world goes on.  
Meanwhile the sun and the clear pebbles of the rain  
are moving across the landscapes,  
over the prairies and the deep trees,  
the mountains and the rivers.  
Meanwhile the wild geese, high in the clean blue air,  
are heading home again.  
Whoever you are, no matter how lonely,  
the world offers itself to your imagination,  
calls to you like the wild geese, harsh and exciting -  
over and over announcing your place  
in the family of things.

\*I couldn't pick just one of these for today, so here is another\*

### *Your World*

By Georgia Douglas Johnson

Your world is as big as you make it.  
I know, for I used to abide  
In the narrowest nest in a corner,  
My wings pressing close to my side.

But I sighted the distant horizon  
Where the skyline encircled the sea  
And I throbbed with a burning desire  
To travel this immensity.

I battered the cordons around me  
And cradled my wings on the breeze,  
Then soared to the uttermost reaches  
With rapture, with power, with ease!