NPRE 441, Spring 2017

Quiz 2

Feb. 6, 2017

Name: __________________________
**Q1:** A sample contains 1 mCi of $^{191}$Os at time $t = 0$. The isotope decays by $\beta^-$ emission into metastable $^{191m}$Ir with half-life of 15.4 days, which then decays by $\gamma$ emission into $^{191}$Ir with half-life of 4.94 seconds.

a) How many grams of $^{191}$Os are present at $t = 0$?
b) How many millicuries of $^{191m}$Ir are present at $t = 25$ days?
c) How many atoms of $^{191m}$Ir decay between $t = 100$ s and $t = 102$ s?
d) How many atoms of $^{191m}$Ir decay between $t = 30$ days and $t = 40$ days?