Quiz #8 Solution: Pratt's lecture, April 24, 2002

1. When $^{215}_{83}\text{Bi}$ decays into $^{215}_{84}\text{Po}$, which particle is released?

   (a) proton
   (b) neutron
   (c) positron
   (d) **electron**
   (e) α particle

A didn't change and Z went from 83 to 84—a neutron got converted into a proton and an electron was emitted.

2. Nucleus $^{228}_{90}\text{X}$ decays by α-particle emission. The daughter nucleus is

   (a) $^{232}_{92}\text{Y}$
   (b) $^{238}_{92}\text{Y}$
   (c) $^{232}_{94}\text{Y}$
   (d) $^{224}_{86}\text{Y}$
   (e) $^{224}_{88}\text{Y}$

α-particle $= ^{4}_{2}\text{He}$, so daughter $Y = ^{228-4}_{90-2}X = ^{224}_{88}Y$