

1. What makes a radioisotope unstable?

a. too many neutrons b. too many protons c. too many protons + neutrons

2. Describe the mass and charge differences between beta, alpha and gamma radiation.

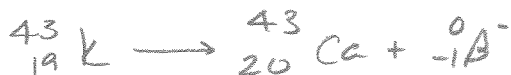
beta are small and negative

alpha are large and positive

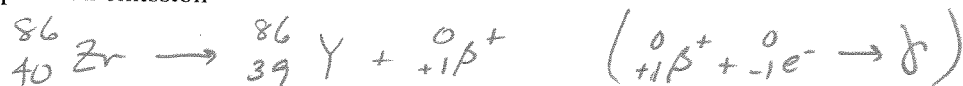
gamma have no mass or charge - it is electromagnetic radiation

3. Write radioactive decay equations for the following radioisotopes undergoing specific decay:

a. potassium-43 undergoing beta decay



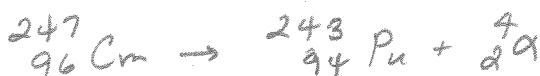
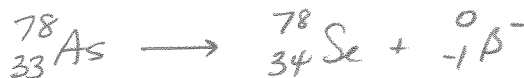
b. zirconium-86 undergoing positron emission



c. thorium-229 undergoing alpha emission



d. titanium-44 undergoing electron capture

4. Write radioactive decay equations for the following radioisotopes by predicting the specific decay:a. ${}^{247}_{96}\text{Cm}$ - alpha
 $Z > 84$ b. ${}^{78}_{33}\text{As}$ - beta
 $78 > 74.9$ c. ${}^{81}_{36}\text{Kr}$ - positron or e^{-} capture
 $81 < 83.8$ d. ${}^{68}_{32}\text{Ge}$ - positron or e^{-} capture
 $68 < 72.64$ e. ${}^{60}_{26}\text{Fe}$ - beta
 $60 > 55.85$ f. ${}^{232}_{90}\text{Th}$ - alpha
 $Z > 84$ 