

Post-Lecture #4: Modes of Radioactive Decay II

1. What nucleons are in excess for cyclotron-derived radionuclides? What nucleons are in excess for reactor-derived radionuclides? How would you explain the reasoning for this?

2. Draw the decay scheme diagram for F-18 to O-18. Describe the decay paths and their differences. No need to include specifics other than the vertical energy-level difference for the positron decay route.

3. Explain the origin of the beta+ decay energy requirement and how this relates to positron annihilation. What is the result of positron annihilation (*at rest*)?

4. Provide the reaction equations for both beta decays and electron capture (**NOT nuclear equations; it should include protons, neutrons, electrons**).

5. Provide the transition energy range restrictions for each mode of decay.