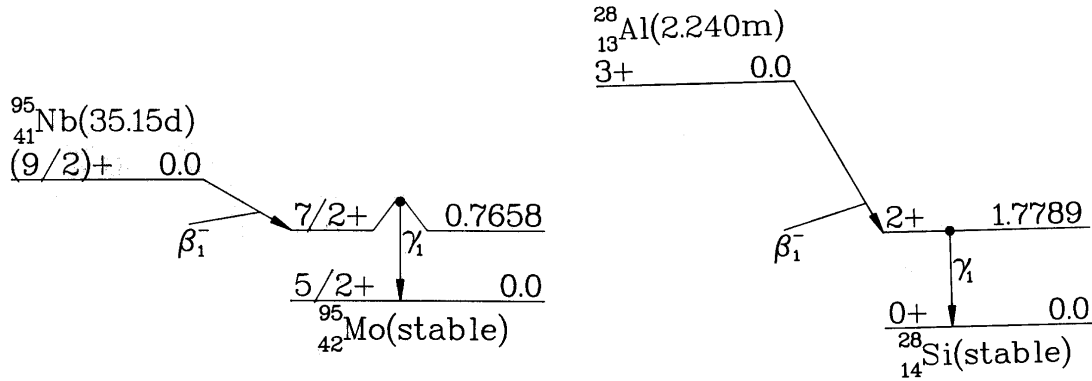


**QUESTION 1**

Answer the following questions related to gamma spectroscopy.

**GIVEN**

Decay Schemes:



$\beta_1^- = 0.04332 \text{ MeV (100\%)}$   
 $\gamma_1 = 0.7657 \text{ MeV (100\%)}$

$\beta_1^- = 1.212 \text{ MeV (100\%)}$   
 $\gamma_1 = 1.779 \text{ MeV (100\%)}$

**POINTS**

- 28 A In the gamma spectra taken with an HPGe detector shown on the next page, identify features 1 through 7. Briefly describe the origin of each feature.
- 8 B If the HPGe detector crystal was increased in size, would the height of the photopeak in relation to the height of the Compton edge be higher or lower? Why?
- 10 C Define FWHM. Is the FWHM of an HPGe detector greater or smaller than that of a NaI(Tl) detector? Why?
- 4 D Why are escape peaks generally more prominent in HPGe detectors in comparison with NaI(Tl) detectors?

