

Problem Set #6: Due in class on Wed. 5/27**Problems from Chapter 12 of Thornton & Rex:** 4, 6, 12, 13, 17, 24, 26, 27, 30, 37,

Extra Problems:

A: Use the information in Appendix 8 to identify all of the nuclei in the $(4n+3)$ or “Actinium” decay series (see Table 12.3) from U-235 to Pb-207. Make a graph like the one in Fig. 12.16 for this series. (Note: In class I use a convention where the axes are reversed for such diagrams. Please follow my convention and put Z on the vertical axis and N on the horizontal axis).

B: Write down the decay reactions for the following unstable particles and calculate the decay energy.

- (i) Radium-226 (alpha decay)
- (ii) Potassium-40 (negative beta decay)
- (iii) Sodium-22 (positive beta decay)
- (iv) Cobalt-57 (electron capture)