

Chapter 31 & 32

Example Problems

1. Based on the Geiger-Marsden gold foil experiment, what did Rutherford conclude?
2. Fill in the blanks:
 - a. The number of protons in a nucleus is called the _____.
 - b. The number of neutrons in the nucleus is called the _____.
 - c. The variable A represents _____.
3. What do electron-scattering experiments allow us to do?
4. What is the nuclear binding energy?
5. What is alpha decay?

6. What is beta decay?

7. What is nuclear fission?

8. What is nuclear fusion?

9. Fill in the missing information:

Test of the Fissionability of Four Nuclides

Target Nuclide	Nuclide Being Fissioned	E_n (MeV)	E_b (MeV)	Fission by Thermal Neutrons?
^{235}U		6.5	5.2	
^{238}U		4.8	5.7	
^{239}Pu		6.4	4.8	
^{243}Am		5.5	5.8	

10. What are the three main difficulties that stand in the way of a working nuclear reactor?

11. What are the three requirements for a successful thermonuclear reactor?

12. How does an Anger Camera work?

13. What is the difference between a CT scan and a PET scan?

14. How is ionizing radiation used for therapeutic purposes?