Lesson 9&10: Nuclear Chemistry II

text: 630-640

what to know:
  - radiation in biology and medicine, §15-4
  - nuclear binding energy, mass defect and nuclear binding energy per nucleon, §15-2
  - nuclear fission processes and related terms, §15-5
  - how various nuclear reactors work, §15-5
  - hazards of "nuclear energy"
  - concept of nuclear fusion and status of fusion reactors, §15-6
  - radioimmunoassay, p-633
  - how radiation affects life
  - problems related with nuclear waste disposal, §15-5
  - process of synthetic nuclear transmutation, §15-6

questions:

1. Explain why much heat is released during fission and fusion.

2. Describe the role of moderators and control rods in nuclear reactors.

3. What is meant by "chain reaction" and "critical mass"?

4. What is heavy water?

5. What are the hazards associated with nuclear reactor?

6. List at least 2 advantages a fusion process would have over a fission process for energy purposes.

7. If nuclear fusion occurs in the sun, what are the problems associated with using nuclear fusion?

8. Which type of radiation from radioactive sources requires the most shielding, alpha, beta or gamma?

9. Why is Strontium-90 a particularly dangerous isotope for humans?

10. Radiation from radioactive sources is considered harmful to life. Exactly what does it do in a living

11. Describe the uses of radioactive isotopes in medicine, chemistry and commercial applications.