Chapter 1 Review

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1. c 2. b (8) 3. d 4. b 5. b 6. e
7. c

9. a) ·Si· b) B· c) Na

12. AR = distance from nucleus to outermost electron
This is different than circular object because atoms are not perfect spheres, the e^- are more cloud like.

16. negative EA ⇒ energy released when an atom gains an e^-
∴ atom will be stable when it gains an e^-, so negative charged ion.

17. As, Sb

19. Average atomic mass = (mass Sb-121)(% Sb-121) + (mass Sb-123)(% Sb-123)
= (120.9038)(0.5730) + (122.9042)(0.4270)
≐ 121.76

∴ average atomic mass is 121.76 a.m.u.

22. When alkali metal loses e^- the atom one less energy level. Thus, there is a significant decrease in size because there is much less space between protons in nucleus and outer electrons.

23. Halogens only need one more e^- to have a full valence shell, so they have a lot of pull to gain an e^- (i.e. have large negative EA)

26. Review how to draw B-R diagrams.

28. Isotopes of an atom have the same # protons but different # of neutrons.

36. Alkali metals have low ionization energy ∴ highly reactive.

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3. d 4. b 5. a 6. d 7. e 8. b
9. a

11. Isotopic abundance indicates how common a certain isotope of an atom is. The greater the abundance of an isotope the more influence its mass has on the average ~~a~~atomic mass.

13. Average atomic mass = (mass Eu-151)(% Eu-151) + (mass Eu-153)(% Eu-153)
= (150.92)(0.4780) + (152.92)(0.5220)
= 151.964

∴ average atomic mass of Europium is 151.964 a.m.u.

17. a) Across period ↑, down group ↓
b) Across period ↓, down group ↑
c) IE and AR trends are opposite
d) As Zeff increases valence electrons are held tighter so AR decreases but it becomes harder to remove an e^- so IE increases.
As # of energy levels increase AR increases but since electrons are further from nucleus it is easier to remove an electron.