

## CHEM 100 Chapter 3 Homework Key

Items boxed in purple were graded out of two points each, with two points earned for a correct answer and one point earned for a reasonable, but incorrect, attempt. Four points were awarded for submission of a completed assignment.

24, 26, 32, 34, 36, 38, 40, 42, 45, 49

24.

<i>Element</i>	<i>Mass Number</i>	<i>Protons</i>	<i>Neutrons</i>
Nickel	60	28	32
Palladium	108	46	62
Nitrogen	14	7	7
Iodine	127	53	74

26. three isotopes of element with  $Z = 47$

32. (a) 9 (b) 19 (c) 30

34. (a) The electron configuration shown is an excited state, the correct ground-state configuration is  $1s^2 2s^2 2p^2$

(b) The electron configuration shown is an excited state, the correct ground state configuration is  $1s^2 2s^2 2p^3$ .

(c) Incorrect, there is no such orbital as a 2d.

(d) Incorrect, the 2s orbital can hold a maximum of 2 electrons.

36. (a) neon (b) argon (c) neon

38. F and Cl have 5 electrons in the outermost p subshell; F has 5 electrons in the 2p; Cl has 5 electrons in the 3p. Br and I are both expected to have 5 electrons in the outermost p subshell.

40. Cs and K

42. Fe and Mo

45. (a) 15 (b) phosphorus (c) 15 (d) 6 (e) 0

49. Fe  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^6$

Sn  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^2$

Pb  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^{10} 6p^2$