

## CHAPTER 2 PRACTICE QUESTIONS

**Directions:** Review what you just learned in this chapter and test your comprehension with these practice questions. Answers can be found directly after the questions.

### Atomic Theory

1. What is the overall charge on the nucleus inside a sodium atom?
  - A) +1
  - B) -1
  - C) 0 (neutral)
  - D) +11
4. Hydrogen has three naturally occurring isotopes: H-1, H-2, and H-3. Without doing any calculations, determine which of these three naturally occurring isotopes is found in greatest abundance. How many neutrons do atoms of this specific isotope contain? (Hint: Look at the atomic mass of hydrogen on the periodic table.)

### Subatomic Particles

2. Isotopes of the same kind of neutral atom have the same numbers of:
  - A) protons and neutrons
  - B) electrons and neutrons
  - C) protons and electrons
  - D) protons, electrons, and neutrons
3. How many protons, electrons, and neutrons are in a neutral atom of  $^{55}_{25}\text{Mn}$ ?
  - A) 25 protons, 30 electrons, 25 neutrons
  - B) 30 protons, 30 electrons, 25 neutrons
  - C) 25 protons, 25 electrons, 30 neutrons
  - D) 30 protons, 25 electrons, 25 neutrons
5. A certain isotope "X" contains 23 protons, 20 electrons, and 28 neutrons. What is the mass number of this isotope? Identify the element and draw the isotope symbol for this ion.
6. If an ion has a charge of +2, which of the following must be true?
  - A) It has two more protons than electrons
  - B) It has two more electrons than protons
  - C) It has two more protons than neutrons
  - D) It has two more neutrons than electrons

### Electron Configuration

7. When a chlorine atom is converted to a chloride ion with a charge of negative one, what happens to the number of unpaired electrons and the total number of electrons around the ion?
  - A) Increases; increases
  - B) Decreases; increases
  - C) Increases; remains the same
  - D) Decreases; remains the same

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8. How many electrons are located in the 3<sup>d</sup> energy level of an atom with an atomic number 26?
- A) 6  
B) 8  
C) 14  
D) 18
10. Which electron transition emits the greatest amount of energy?
- A)  $2p \rightarrow 1s$   
B)  $3p \rightarrow 3s$   
C)  $1s \rightarrow 4p$   
D)  $4p \rightarrow 1s$

## Electron Energy

9. Which of the following statements correctly describes the relationship between the energy of a given electron and its distance from the nucleus?
- A) Electrons of all energies are located the same distance from the nucleus.
- B) The greater the energy an electron has, the farther it is located from the nucleus.
- C) The greater the energy an electron has, the closer it is located to the nucleus.
- D) The energy of an electron is unrelated to its distance from the nucleus.