

## Chapter Quiz (31 Points)

### True/False Questions (10 Points)

1. **True/False:** Thomson's cathode ray experiment led to the discovery of the neutron.  
**Point Value:** 1
2. **True/False:** In the cathode ray experiments, the deflection of the rays by an electric field indicated they were charged particles.  
**Point Value:** 1
3. **True/False:** Thomson concluded that cathode rays were positively charged particles.  
**Point Value:** 1
4. **True/False:** The results of Thomson's cathode ray experiments supported the plum pudding model of the atom.  
**Point Value:** 1
5. **True/False:** Millikan's oil drop experiment measured the charge of the electron.  
**Point Value:** 1
6. **True/False:** Millikan's oil drop experiment involved balancing the gravitational and electric forces acting on charged oil droplets.  
**Point Value:** 1
7. **True/False:** Millikan observed that the charge on each oil drop was always a multiple of a fundamental unit of charge.  
**Point Value:** 1
8. **Question:** Rutherford's gold foil experiment supported the plum pudding model of the atom.  
**Point Value:** 1
9. **Question:** In Rutherford's experiment, most alpha particles passed through the gold foil without deflection, suggesting atoms are mostly empty space.  
**Point Value:** 1
10. **Question:** Rutherford's gold foil experiment showed that the nucleus is positively charged.  
**Point Value:** 1

### Multiple Choice Questions (21 Points)

1. **An element has an atomic number of 6 and a mass number of 12. Identify its atomic symbol.**  
A) He  
B) Li  
C) C  
D) N  
**Point Value:** 2
2. **Determine the atomic symbol for an element with an atomic number of 17 and 18 neutrons.**  
A) Cl  
B) Ar  
C) K

D) Ca

**Point Value:** 2

3. Which element has an atomic number of 10 and 10 electrons?

A) Ne

B) Na

C) Mg

D) Al

**Point Value:** 2

4. What is the atomic symbol for silver?

A) Si

B) Sr

C) Au

D) Ag

**Point Value:** 2

Bromine is a member of which group?

A) noble gases

B) halogens

C) alkali metals

D) pnictogens

**Point Value:** 2

5. Ions are formed when atoms

A) gain or lose proton

B) gain or lose electrons.

C) gain or lose neutrons.

D) All of these result in ion formation.

**Point Value:** 2

6. An ion has 12 protons, 10 electrons, and 12 neutrons. Identify its atomic symbol.

A)  ${}_{12}^{24}\text{Mg}^{4-}$

B)  ${}_{12}^{22}\text{Mg}^{4+}$

C)  ${}_{12}^{24}\text{Mg}^{2+}$

D)  ${}_{12}^{24}\text{Mg}^{2+}$

**Point Value:** 2

7. An ion has 20 protons, 18 electrons, and a mass number of 40. Identify the atomic symbol of this ion.

A)  ${}_{20}^{42}\text{Ca}^{2+}$

B)  ${}_{20}^{40}\text{K}^{+}$

C)  ${}_{20}^{40}\text{Ca}^{2+}$

D)  ${}_{20}^{40}\text{K}^{2+}$

**Point Value:** 2

8. How many protons, neutrons and electrons does  ${}_{17}^{35}\text{Cl}^{-}$  have?

A)  $p^{+} = 17$ ,  $n^0 = 18$ ,  $e^{-} = 18$

B)  $p^{+} = 17$ ,  $n^0 = 35$ ,  $e^{-} = 18$

C)  $p^{+} = 17$ ,  $n^0 = 18$ ,  $e^{-} = 16$

D)  $p^{+} = 17$ ,  $n^0 = 52$ ,  $e^{-} = 16$

**Point Value:** 2

9. Silicon has three naturally occurring isotopes:  $^{28}_{14}\text{Si}$  with a mass of 27.977 amu (92.23% abundance),  $^{29}_{14}\text{Si}$  with a mass of 28.976 amu (4.67% abundance), and  $^{30}_{14}\text{Si}$  with a mass of 29.974 amu (3.10% abundance). Calculate the average atomic mass of silicon in amu.

A) 27.18 amu

B) 28.08 amu

C) 29.15 amu

D) 31.99 amu

**Point Value:** 3