**Quiz 4A**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Classify each of the following quantities as continuous or quantized (2 points):
   1. Cars passing through a toll plaza. \_\_\_\_\_quantized\_\_\_\_\_\_\_\_\_\_
   2. Electromagnetic spectrum. \_\_\_\_\_continuous\_\_\_\_\_\_\_\_\_\_
2. Draw a 2s and a 4s orbitals (2 points).



1. Infrared radiation, IR, has wavelengths from 1.0 × 10-6 to 1.0 × 10-3 m, whereas the wavelength region for gamma ray radiation is 1.0 × 10-16 to 1.0 × 10-11 m (2 points).
   1. The frequency of IR is (higher, lower, the same as) gamma ray radiation.
   2. The speed of IR is (faster than, slower than, the same as) gamma ray radiation.
2. Answer the following questions about germanium (6 points).
   1. What is the chemical symbol? \_\_\_\_Ge
   2. What is the complete electron configuration? \_\_\_1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p2
   3. What is the condensed electron configuration? \_\_\_[Ar] 4s2 3d10 4p2
   4. How many d electrons total? \_\_\_10
   5. How many valence electrons (outer s and p electrons)? \_\_\_4
   6. Write the dot structure.
3. What evidence did Bohr use to support his Planetary Model of the Atom (2 points)?

Line spectra

1. Is this week’s experiment a dry lab or a wet lab (1 point)? \_\_\_\_dry lab\_\_\_\_\_

**Quiz 4B**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Is this week’s experiment a wet lab or a dry lab (1 point)? \_\_\_\_dry lab
2. Classify each of the following quantities as continuous or quantized (2 points):
   1. Elevation of a person on a ramp. \_\_\_\_\_continuous\_\_\_\_\_\_\_\_\_\_
   2. Weight of jelly beans. \_\_\_\_\_quantized\_\_\_\_\_\_\_\_\_\_
3. Draw a 2p and a 3p orbitals (2 points).



1. In Bohr’s model of the atom where are protons and neutrons found (2 points)?

In Bohr’s model of the atom protons and neutrons are found in the nucleus.

1. Answer the following questions about arsenic (6 points).
   1. What is the chemical symbol? \_\_\_\_As
   2. What is the complete electron configuration? \_\_\_1s2 2s2 2p6 3s2 3p64s23d104p3
   3. What is the condensed electron configuration? \_\_\_[Ar] 4s2 3d10 4p3
   4. How many d electrons total? \_\_\_10
   5. How many valence electrons (outer s and p electrons)? \_\_\_5
   6. Write the dot structure.
2. Visible light has frequencies from 4.3 × 1014 to 7.5 × 1014 Hz, whereas the frequency region for X-ray radiation is 3.0 × 1016 to 3.0 × 1019 Hz (2 points).
3. The speed of visible light is (faster than, slower than, the same as) X-ray radiation.
4. The wavelength of visible light is (higher, lower, the same as) X-ray radiation.