

G12 Chemistry: Class 6 Homework

1. Identify the following atoms or ions from their electron configurations: **[4 marks]**

a. W: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^3$ _____

b. X^+ : $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$ _____

c. Y^- : $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6$ _____

d. Z: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{11}$ _____

2. Write the condensed ground-state electron configuration and an orbital filling diagram for each of the following atoms or ions. (HINT: Pay close attention to anomalous configurations!) **[10 marks]**

a. Mg

b. S^{2-}

c. K^+

d. Cr

e. Au

3. In general, ionization energy increases from left to right across a period. Aluminum, however, has a lower ionization energy than magnesium. Explain. **[3 marks]**

4. The following data lists the ionization energies for a given atom:

$$IE_1 = 738 \text{ kJ/mol}$$

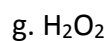
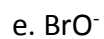
$$IE_2 = 1451 \text{ kJ/mol}$$

$$IE_3 = 7733 \text{ kJ/mol}$$

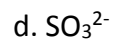
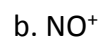
Predict the valence electron configuration for this atom and explain your reasoning. **[2 marks]**

5. Draw Lewis structures for each of the following molecules. **[8 marks]**

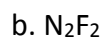
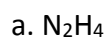




6. Draw Lewis structures for each of the following ions. (HINT: Consider resonance structures). **[4 marks]**



7. Draw Lewis structure for the following molecules. (Note: Neither of these molecules has a single central atom.) **[2 marks]**



8. Draw Lewis structures for the following molecules: **[6 marks]**

