

Be sure to show all work, use the correct number of significant figures, circle final answers and use correct units in all problems.

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1. Draw the Lewis structure for water ( $\text{H}_2\text{O}$ ). Describe the electron pair geometry (EPG), molecular geometry (MG), bond angles and polarity for water. (5 points)

2. Give electron configurations for the following atoms and ions (5 points)

Mg

Ga

$\text{Sc}^{1+}$

$\text{O}^{2-}$

Sr

3. Which **neutral atom** has the following electron configuration? Write the name and the symbol for the atom. (5 points)

$1s^2 2s^2 2p^6 3s^2 3p^4$

$1s^2 2s^2 2p^2$

$1s^2 2s^2 2p^6$

$[\text{Xe}] 6s^2$

$[\text{Rn}] 7s^1$

4. Answer the following questions. (5 points)

What is the  $n$  value in  $4p$ ?

What is the  $\ell$  value in  $3d$ ?

How many unpaired electrons are found in neutral atoms of N?

Is neutral magnesium paramagnetic or diamagnetic?

Is  $\text{Mg}^{2+}$  paramagnetic or diamagnetic?