

Part I

- Why are elements in groups 1A through 8A called representative elements?
- What determines the chemical behavior of an element?
- What is an allotrope? Describe 2 allotropes of carbon.
- What factor determines the magnetic properties of an element and the color of its compounds?

Part II For the following transition metal ions, first indicate the electron configuration of the neutral element, then determine how many electrons are lost to form the ion and write the configuration of the ion. Remember, transition metals first lose their two s-electrons, and then lose d-electrons to get to their charge.

Ion	Config of Element	#e ⁻ lost	Config of Ion
ex Fe ³⁺	[Ar] 4s ² 3d ⁶	3 e ⁻ lost	[Ar] 3d ⁵
5. Pd ²⁺			
6. Ti ⁴⁺			
7. Mn ⁴⁺			
8. Zn ²⁺			
9. Rh ⁴⁺			

Part III For the following transition metals, first write the electron configuration of the neutral element. From the given electron configuration of the ion, determine number of electrons lost and write the formula of the ion (including the charge on the ion).

Element	Config of Element	Config of Ion	#e ⁻ lost	Ion w/ Charge
ex Nb	[Kr] 5s ² 4d ³	[Kr] 4d ²	3 e ⁻ lost	Nb ³⁺
10. Fe		[Ar] 3d ⁶		
11. Cd		[Kr] 4d ¹⁰		
12. Y		[Kr]		
13. Cr		[Ar] 3d ³		
14. Ru		[Kr] 4d ⁵		