

Periodic Trends Questions

1. Write the symbol of an element with five valence electrons.
2. Based on periodic trends, which of the following elements has the *smallest* ionization energy? Cl, K, S, Se, Br
3. Which of the following has the *largest* radius (size)? Na^+ , Ar, Se^{2-} , O^{2-} , Al^{3+}
4. Which of the following atoms is the smallest? Ca, Sr, Si, N, B
5. Why does atomic size decrease from left to right across a period?

6. Element X has the following successive ionization energies (in kJ) :

1st	2nd	3rd	4th
737	1450	7731	10545

- (a) Element X is a member of what chemical family (group)
 - (b) When X forms an ion, what ion does it form (i.e. +1 +2 +3)?
7. What element loses an electron more readily Na or Mg? Explain.....
 8. Why is the process of ionization always require an input of energy?
 9. Arrange the following elements in of *increasing* ionization energy: Be, Cs, Li, Cl
 10. Arrange the following in order of *increasing* size: Al, Mg, Cl, Al^{3+}
 11. Why can lithium form a +1 ion, but not a -1 or +2 ion?

12. What are shielding electrons? What role do they play in determining the effective nuclear charge?
13. Write the symbol of an element with seven valence electrons.
14. What group of elements has the outer electron configuration ns^2np^4 ?
15. Based on periodic trends, which of the following elements has the *greatest* ionization energy? Br, Ca, S, Se
16. Which of the following has the *smallest* radius (size)? Na^+ , Ar, Al^{2+} , O^{2-} , Al^{3+}
17. Why does atomic size increase going down a group?

18. Element X has the following successive ionization energies (in kJ) :

1st	2nd	3rd	4th
737	1450	2950	18545

Element X is a member of what chemical family (group)?

19. What element gains an electron more readily F or Br? Explain.....
20. Arrange the following elements in order of *increasing* ionization energy: Ge, F, Cs, K
21. Arrange the following in order of *increasing* size: Na, Ba, I, Cl
22. What is the most reasonable ion formed by: Ca, O, I, Li
23. Why is Li larger than F?