Questions-by Lesson-5- Periodic Trends

1. Which among the following is the largest atom?

   a) F b) Ar c) Al d) N e) B

   For the **next three questions**, (2 - 4), consider the electronic configurations given below for **neutral** atoms.

   A) $1s^2 2s^2 2p^6 3s^2$ B) $1s^2 2s^2 2p^6 3s^1$ C) $1s^2 2s^2 2p^6$
   D) $1s^2 2s^2 2p^5$ E) $1s^2 2s^2 2p^3$

2. Which of the electronic configurations would have the lowest ionization energy?

   a) A b) B c) C d) D e) E

3. Which of the electronic configurations should have the lowest second ionization energy?

   a) A b) B c) C d) D e) E

4. The configurations in order of increasing ionization energy are

   a) A,B,C,D,E b) B,A,E,D,C c) E,A,C,D,B
   d) E,D,C,A,B e) C,D,A,E,B

5. The ionization energy of oxygen (1318 kJ/mol) is lower than the ionization energy of nitrogen (1407 kJ/mol). This is mainly due to

   a) an increase in the nuclear charge as the atomic number increases from 7 to 8
   b) the increased distance between the valency electrons and the nucleus in oxygen
   c) the extra repulsion from the 8th electron entering the partially filled $2p_X$ orbital of oxygen
   d) the smaller size of the oxygen atom

6. The first five ionization energies for a certain element are shown below.

E_1 = 400 E_2 = 620 E_3 = 9800 E_4 = 1220 E_5 = 15800

Which family of elements would this element be in?

a) IA b) IIA c) IIIA d) IVA e) VA

7. The first three ionization energies for two elements, X and Y, are

Ionization Energies (kJ mol^{-1})

	First	Second	Third
X	520	7,300	11,800
Y	1,086	2,350	4,620

Which pair of elements represents X and Y?

A. $_3$Li and $_6$C B. $_4$Be and $_8$O C. $_2$He and $_4$Be D. $_8$O and $_{16}$S

8. The term electronegativity difference refers to the fact that:
   a) an electric current is a stream of negative particles called electrons
   b) some elements conduct electricity while others do not
   c) it requires energy to remove electrons from neutral atoms
   d) the attraction for electrons in a bond formed between two atoms is uneven
   e) the electronegativity of an element changes with temperature

9. Which one of the elements below has the highest electronegativity?
   a) Ne b) S c) I d) Li e) Ba

10. How do chemical reactivities of the alkali metals and the halogens vary down the families?

A. They both increase.

B. The reactivities of the alkali metals increase but those of the halogens decrease.

C. The reactivities of the alkali metals decrease but those of the halogens increase.

D. They both decrease

Multiple Choice Answers

1	2	3	4	5	6	7	8	9	10
C	B	A	B	C	B	A	D	B	B