

## PERIODIC PROPERTIES

### Sample Questions from the Examination Papers

**2011**

- Q.** Fill in the blanks from the choices given below:
1. Across a period, the ionization potential \_\_\_\_\_ (increases, decreases, remains same).
  2. Down the group, electron affinity \_\_\_\_\_ (increases, decreases, remains same).
- Q.** Give the number of the group and the period, of the element having three shells with three electrons in valence shell.

**2010**

- Q.** Select the correct answer from the choices A, B, C and D which are given:  
Write the letter corresponding to the correct answer.  
The number of electrons present in the valence shell of halogen is:  
(A) 1      (B) 2      (C) 3      (D) 7
- Q.** Match the column A with column B.

Column A	Column B
(i) Electronegativity across The period	Increases
(ii) Non-metallic character down the group	Decreases

- Q.** An element has an atomic number 16. State
- (i) the period to which it belongs
  - (ii) the number of valence electrons
  - (iii) whether it is a metal or non-metal
- Q.** Define the following terms:
- (i) Ionization potential
  - (ii) Electron affinity

**2009**

Group No.	IA 1	IIA 2	IIIA 13	IVA 14	VA 15	VIA 16	VIIA 17	Zero 18
	Li		D			O	J	Ne
	A	Mg	E	Si		H	K	
	B	C		F	G			L

Consider the section of periodic table below:

- Q.** You must see the position of element in the periodic table. Some elements are given with their symbol in the table; others are shown with alphabet in the table. With respect to the table, answer the following:

1. Which is the most electronegative?
2. How many valence electrons are present in G?
3. Write the formula of the compound between B and H.
4. In the compound between F and J, what type of bond will be formed?
5. Draw the electron-dot structure for the compound formed between C and K.

### 2008

**Q.** With reference to the variation of properties in the Periodic Table, which of the following is generally true?

1. Atomic size increases from left to right across a period.
2. Ionization potential increases from left to right across a period.
3. Electron affinity increases going down a group.
4. Electro-negativity increases going down a group.

**Q.** The following questions refer to the Periodic Table.

1. Name the first and last element in period 2.
2. What happens to the atomic size of elements moving from top to bottom of a group?
3. Which of the elements has greatest electron affinity among the halogens?
4. What is the common feature of the electronic configurations of the elements in group 7?

**Q.** Supply the missing word from those in the brackets (Do not write out the sentence).

1. If an element has a low ionization energy then it is likely to be \_\_\_\_\_ (metallic/non-metallic).
2. If an element has seven electrons in its outermost shell then it is likely to have the \_\_\_\_\_ (largest/smallest) atomic size among all the elements in the same period

**Q.**

1. The metals of Group 2 from top to bottom are: Be, Mg, Ca, Sr, Ba. Which of these metals will form ions most readily and why?
2. What property of an element is measured by electronegativity?

### 2007

**Q.** A group of elements in the periodic Table are given below (Boron is the first member of the group and Thallium is the last):

Boron, Aluminium, Gallium, Indium, Thallium

Answer the following questions in relation to the above group of elements:

1. Which element has the most metallic character?
2. Which element would be expected to have the highest electronegativity?
3. If the electronic configuration of Aluminium is 2, 8, 3 how many electrons are there in the outer shell of Thallium?
4. The atomic number of Boron is 5. Write the chemical formula of the compound formed when Boron reacts with chlorine.
5. Will the elements in the group to the right of this Boron group be more metallic or less metallic in character? Justify your answer.

**2006**

**Q.** The elements of one short period of the Periodic Table are given below in order from left to right:-

Li                      Be                      B                      C                      O                      F                      Ne

1. To which period do these elements belong?
2. One element of this period is missing. Which is the missing element and where should it be placed?
3. Which one of the elements in this period shows the property of catenation?
4. Place the three elements fluorine, beryllium and nitrogen in the order of increasing electro-negativity.
5. Which one of the above elements belongs to the halogen series?

**2005**

**Q.** Parts (i) to (v) refer to changes in the properties of elements on moving left to right across a period of the periodic table. For each property, choose the letter corresponding to the correct answer from the choices A, B, C and D.

1. The non-metallic character of the elements.  
A. decreases                      B. Increases  
C. remains the same              D. depends on the period
2. The electronegativity  
A. depends on the number of valence electrons  
B. remains the same  
C. decreases  
D. increases
3. The ionization potential  
A. goes up and down              B. decreases  
C. increases                      D. remains the same
4. The atomic size  
A. decreases                      B. increases  
C. remains the same              D. sometimes increases sometimes decreases
5. The electron affinity of the elements in group 1 to 7  
A. goes up and then down              B. increases  
C. decreases and then increases      D. decreases

**2004**

**Q.** The electronegativity (according to Pauling) of the elements in period 3 of the Periodic Table are as follows with the elements arranged in alphabetical order:

Al	Cl	Mg	Na	P	S	Si
1.5	3.0	1.2	0.9	2.1	2.5	1.8

1. Arrange the elements in the order in which they occur in the Periodic Table from left to right. (The group 1 element first, followed by the group 2 element and so on, up to group 7.)

2. Choose the word or phrase from the brackets which correctly completes each of the following statements.
  - (i) The element below sodium in the same group would be expected to have a \_\_\_\_\_ (lower/higher) electronegativity than sodium and the Y element above chlorine would be expected to have a \_\_\_\_\_ (lower/higher) ionization potential than chlorine.
  - (ii) On moving from left to right in a given period, the number of shells (remains the same/increases/decreases).
  - (iii) On moving down a group, the number of valence electrons (remains the same/increases/decreases).

### 2003

- Q.** The following table represents the first three periods of the modern periodic table. Study the table and answer the questions that follow:

1A																	O
1 H	2 A										3A	4A	5A	6A	7A	2 He	
3 Li	4 Be										5 B	6 C	7 N	8 O	9 F	10 Ne	
11 Na	12 Mg										13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

1. Write the formula of the sulphate of the element with number 13.
2. What type of bonding will be present in the oxide of the element with atomic number 13.
3. Which feature of the atomic structure accounts for the similarities in the chemical properties of the elements in group 7A of the periodic table?
4. Name the element which has the highest ionization potential.
5. How many electrons are present in the valence shell of the element with the atomic number 18?
6. What is the name given to the energy released when an atom in its isolated gaseous state accepts an electron to form an anion?
7. What is the electronic configuration of the element in the third period which gains one electron to change into an anion?
8. Fill in the blanks:  
The atomic size \_\_\_\_\_ as we move from left to right across the period, because the \_\_\_\_\_ increases but the \_\_\_\_\_ remains the same.

### 2002

- Q1.** What is meant by a Group in the Periodic Table?
2. Within a Group where would you expect to find the element with:
    - a. The greatest metallic character?
    - b. The largest atomic size?
  3. State whether the ionization potential increases or decreases on going down a Group.
  4. How many elements are there in Period 2?

## 2001

- Q. Copy and complete the following sentences choosing the correct word or words from those given in brackets at the end of each sentence-
1. The properties of the elements are a periodic function of their \_\_\_\_\_ atomic number, mass number, relative atomic mass)
  2. Moving across a \_\_\_\_\_ of the Periodic Table the elements show increasing \_\_\_\_\_ character (group, period, metallic, non-metallic)
  3. The element at the bottom of a group would be expected to show \_\_\_\_\_ metallic character than the element at the top (less, more)
  4. The similarities in the properties of a group of elements is because they have the same \_\_\_\_\_ (electronic configurations, number of outer electrons, atomic numbers.

## 2000

### Q(a)

1. State the number of elements in period 1, period 2, and period 3 of the - periodic table.
2. Name the elements in period 1.
3. What happens to atomic size of elements on moving from left to right in a period?

### (b)

1. What is the common feature of the electronic configurations of the elements at the end of period 2 and period 3?
2. If an element is in group 7 (or group 7A), is it likely to be metallic or non-metallic in character?
3. Supply the missing word from those in brackets:  
If an element has one electron in its outermost energy level (shell) then it is likely to be ..... (metallic / non-metallic).

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