



# **CHEMISTRY**

## **BOOKS - S DINESH & CO CHEMISTRY (HINGLISH)**

### **CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES**

**Revision q. from competitive exam**

1. Which of the following ion will form most water soluble hydroxide?



**Answer: A**



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1. Which elements among the following have same value of electronegativity?

A. P and H

B. S and P

C. Cl and N

D. S and O

**Answer: A::C**



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## linked comprehension

1. Although every element is different from every other element, yet some elements have certain similarities. Based upon these similarities, the scientists after numerous attempts were are given. Based upon these multiple choice questions are ultimately sucessful in arranging the various elements into groups or chemical families in such a way that similar elements were put together. This

arrangement of elements is called classification of elements and this led to the formulation of a periodic table. The periodic table is the most organising principle in chemistry. If you know the properties of any element in a group, or of the columns, of the periodic table, you can make a good guess at the properties of every other element in the same group and even the elements in the neighbouring groups. The first break through in the classification of elements, was provided by Russian chemist Dmitri Iunovich Mendeleev. Taking the chemistry of the elements as his

primary organising principle, he arranged the known elements by atomic mass and grouped them together according to their chemical reactivity. He also observed that there occurred recurrence of elements with similar physical and chemical properties after certain regular intervals. On the basis of these similarities Mendeleev proposed his periodic law which states that physical and chemical properties of elements are a periodic function of their atomic masses. Moseley suggested that atomic number was a better fundamental property of an element than its atomic mass.

This forms the basis of the Modern periodic law. Thus, modern periodic law states that physical and chemical properties of the elements are a periodic function of their atomic numbers. In the modern long form of periodic table the elements are arranged in the increasing order their atomic numbers and the elements with similar properties repeat after regular intervals. Repetition of chemical properties of elements at regular intervals when arranged in a definite order is called periodicity of properties. This is due the recurrence of similar outer electronic

configuration at certain regular intervals. The long form of periodic table may be divided into four main blocks known as s, p, d and f blocks depending upon the type of orbitals being filled up with the increase in atomic number in atoms of the elements. The nature of the block to which an element belongs depends upon the type of subshell which receives the last electron.

In the long form of periodic table, all the non-metals are collectively placed in

A. s-block



B. p-block

C. f-block

D. d-block

**Answer: B**

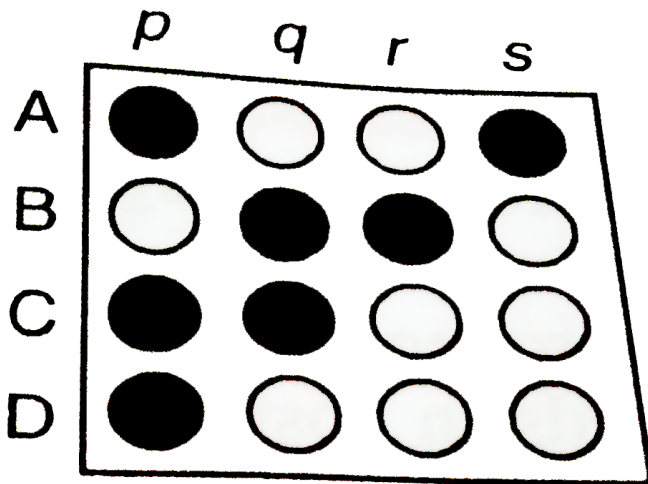


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**matrix**

1. Here each question contains statements given in two columns which have to be

matched. Statements in column I are labelled as A,B,C and D where as statements in column II are labelled as p,q,r and s. The answers to these questions are to be bubbled  $4 \times 4$  matrix. If the correct matches are A-p, A-s, B-q, B-r, C-p, C-q and D-p, then corretly bubbled matrix should look like this following.



Match the following

1. Column I		Column II
A. Magnesium	<i>p</i>	<i>s</i> -block
B. Aluminium	<i>q</i>	Metal
C. Phosphorus	<i>r</i>	<i>p</i> -block
D. Bromine	<i>s</i>	Non-metal



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## Assertion and reason

1. Assertion: The electron affinity of chlorine is greater than that of fluorine.

Reason: Chlorine is more electronegative than fluorine.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



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## ultimate preparatory package

1. First ionisation potential for copper is higher than that for potassium. The second ionisation potential of copper is

A. Equal to the 2nd ionisation potential of potassium

B. more than the 2nd ionisation potential of potassium

C. less than the 2nd ionisation potential of potassium

D. less than the 2nd ionisation potential of potassium



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**Others**

1. The *3rd* period of the periodic table contains

A. 8 elements

B. 32 elements

C. 3 elements

D. 18 elements

**Answer: A**



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2. The element californium belongs to a family of

A. actinide series

B. alkali metals

C. lanthanides

D. alkaline earth metals

**Answer: A**



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3. Which set contains pair of elements that do not belong to same group but show chemical resemblance ?

A.  $Hf, Zr$

B.  $K, Rb$

C.  $Be, Al$

D.  $B, Al$

**Answer: C**



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4. Which of the following belongs to the category of transition metals?

A. K

B. Ra

C. Fe

D. Al

**Answer: C**



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5. Without looking at the periodic table, select the elements belonging to same from the following list.

A.  $Z=12, 38, 4, 88$

B.  $Z=9, 16, 3, 35$

C.  $Z=5, 11, 27, 19$

D.  $Z=24, 47, 42, 55$

**Answer: A**



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6. The elements of same group of the periodic table have

A. Same number of protons

B. Same valence shell

C. Same valence electrons

D. Same electron affinity

**Answer: C**



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7. The elements which are characterised by the outer shell configuration  $ns^1$  to  $np^6$  are collectively called

- A. Transition elements
- B. Representative elements
- C. lanthanides
- D. inner transition elements.

**Answer: B**



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8. Elements with atomic number 35 belongs to

- A. 3rd group
- B. 18th group
- C. 17th group
- D. 5th group

**Answer: C**



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9. *Pd* has exceptional valence shell electronic configuration of  $4d^{10}5s^0$ . It is a member of-

A. 4th period

B. 6th period

C. 7th period

D. 5th period

**Answer: D**



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10. The element with atomic number 56 belongs to which block ?

A. s-block

B. p-block

C. d-block

D. f-block

**Answer: A**



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**11.** The tenth element in the periodic table resembles the elements with atomic number

A. 2 as well as 30

B. 2 as well as 54

C. 8 as well as 18

D. 8 only

**Answer: B**



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12. The first ionisation energy of Al is smaller than that of Mg because :

A. Atomic size of Al  $>$  Mg

B. Atomic size of Al  $<$  Mg

C. I.E. in Al pertains to the removal of p-electron which is relatively easy

D. unpredictable.

**Answer: C**



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**13.** The second ionisation potential is

- A. Less than the first ionisation potential
- B. Equal to the first ionisation potential
- C. Greater than the first ionisation potential
- D. None of these

**Answer: C**



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**14.** Which of the elements show least values of ionisation enthalpy within their periods ?

A. Alkaline earth metals

B. Alkali metals

C. Noble gas

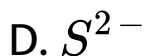
D. Chalcogens

**Answer: B**



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15. Which of the following isoelectronic ions have the lowest ionization enthalpy ?

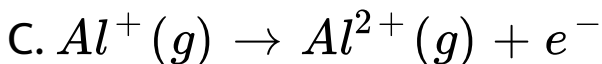
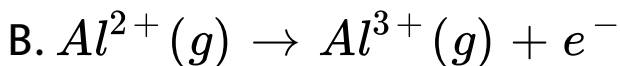
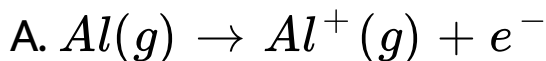


**Answer: D**



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16. Which of the following process requires the largest amount of energy ?



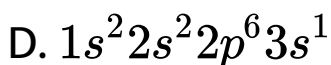
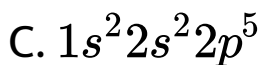
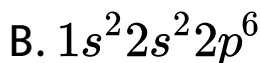
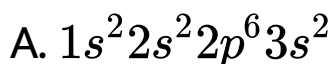
D. All the processes require same amount of energy

**Answer: B**



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17. From the ground state electronic configuration of the elements given below, pick up the one with the highest value of second ionisation energies



**Answer: D**



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**18.** The elements which occupy the peaks of ionisation energy curve are

A. Na,K,Rb,Cs

B. Na,Mg,Cl,O

C. Cl,Br,I,F

D. He,Ne,Ar,Kr

**Answer: D**



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**19.** The power of an atom to attract the shared pair in a molecule:

A. electron gain enthalpy

B. electronegativity

C. ionisation enthalpy

D. none of these

**Answer: B**



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**20.** Which out of the following has the largest ionisation energy ?

A. increase in nuclear charge

B. increases in atomic size and nuclear charge

C. increases in nuclear charge and decreases in shielding effect

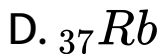
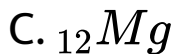
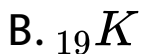
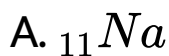
D. increase in atomic size and also shielding effect.

**Answer: D**



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**21.** Which of the following has the largest ionisation energy.



**Answer: C**



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**22.** Which of the following statement concerning ionisation energy is not correct ?

A. The second ionisation energy is always more than the first

B. Within a group, there is a gradual increase in ionisation energy because

nuclear charge increases

C. Ionisation energy of  $Be$  is more than  $B$

D. Ionisation energies of noble gases are high.

**Answer: B**



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**23.** The pair in which the ionisation energy of first species is less than that of second is

A.  $N, P$

B.  $Be^{2+}, Be$

C.  $N, N^{-}$

D.  $S, P$

**Answer: D**



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**24.** Arrange  $S, P$  and  $As$  in order of increasing ionisation energy.

A.  $S < P < As$

B.  $P < S < As$

C.  $As < S < P$

D.  $As < P < S$

**Answer: C**



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**25.** The first ionisation potential of calcium is greater than that of potassium because for calcium

- A. the effective nuclear charge is higher
- B. the electron is removed from s-subshell
- C. the electron is removed from a circular subshell
- D. the removal of electron does not give noble gas configuration.

**Answer: A**



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**26.** The increasing order of ionisation energy among sulphur, phosphorous and oxygen is

A.  $S < P < O$

B.  $P < S < O$

C.  $O < S < P$

D.  $O < P < S$

**Answer: A**



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27. Which of the following does not affect the ionisation potential of the atom ?

A. Nuclear charge

B. electron neutrality with protons

C. penetration effect

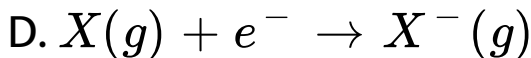
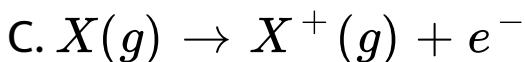
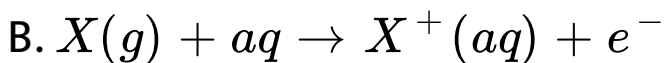
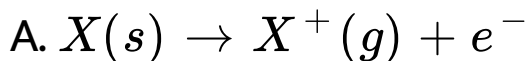
D. atomic size.

**Answer: B**



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**28.** Which of the following process refers to ionisation potential ?



**Answer: C**



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29.  $r_{\text{(van der Waal)}}$  is

A. half the bond length

B. twice the bond length

C. half of the distance between centres of nuclei of two non-bonded atoms of adjacent molecules in solid state

D. None of these

**Answer: C**



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**30.** The correct order of the size of C, N, P, S following the order:

A.  $N < C < P < S$

B.  $C < N < S < P$

C.  $C < N < P < S$

D.  $N < C < S < P$

**Answer: D**



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31. Which of the following has smallest size ?



**Answer: A**



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**32.** Which of the following units are used frequently for atomic radii ?

A. meter

B. picometers

C. kilometers

D. centimeters

**Answer: B**



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33. The size of the species  $Cl$ ,  $Cl^-$  and  $Cl^+$  decreases as

A.  $Cl > Cl^+ > Cl^-$

B.  $Cl^+ > Cl^- > Cl$

C.  $Cl^- > Cl^+ > Cl$

D.  $Cl^- > Cl > Cl^+$

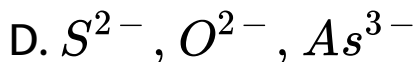
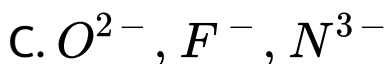
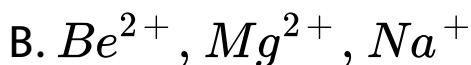
**Answer: D**



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**34.** The ions which are arranged in correct order of increasing radii are

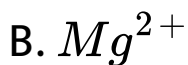


**Answer: B**



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35. Which out of the following has the largest size ?



**Answer: A**



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**36.** The correct arrangement of O,P and N in order of increasing radii is

A.  $O < N < P$

B.  $P < O < N$

C.  $O < P < N$

D.  $N < O < P$

**Answer: A**



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37. Covalent radius of  $\text{Li}$  is  $123 \pm$  .The crystal radius of  $\text{Li}$  will be:

A.  $< 123 \text{ pm}$

B.  $= 123 \text{ pm}$

C.  $< 123 \text{ pm}$

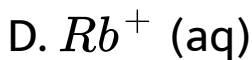
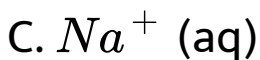
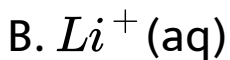
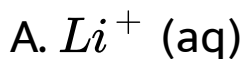
D.  $123/2 \text{ pm}$

**Answer: C**



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38. The ionic species having largest size is

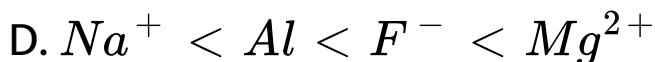
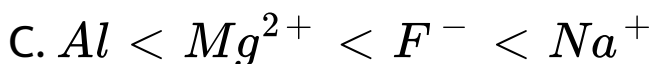
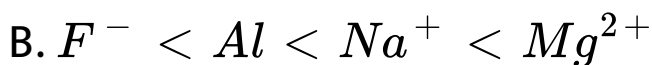
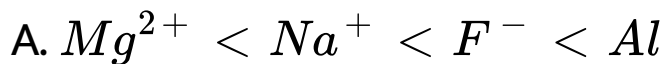


**Answer: A**



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**39.** The size of the following species increases in the order

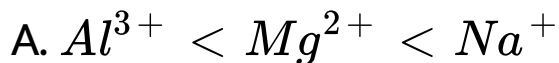


**Answer: A**



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40. Which of the following represents the incorrect order of ionic radii ?



D. none of the above

**Answer: B**



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41. The size of species  $I$ ,  $I^+$  and  $I^-$  decrease in the order.

A.  $I > I^+ > I^-$

B.  $I^- > I^+ > I$

C.  $I^- > I > I^+$

D. All have same size

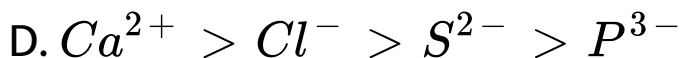
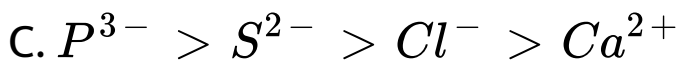
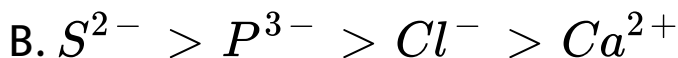
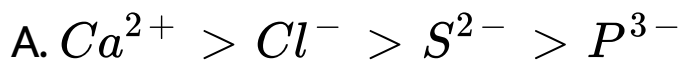
**Answer: C**



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42. The correct decreasing order of ionic size among the following species is  $K^+$ ,  $Cl^-$ ,  $S^{2-}$  and  $Ca^{2+}$ .



**Answer: D**



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**43.** The electronic configuration of elements of group 18 can be represent by

A.  $ns^2$

B.  $ns^2np^5$

C.  $ns^2np^6$

D.  $(n - 1)d^8ns^2$

**Answer: C**



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**44.** The general configuration for elements of group 9 is

A.  $(n - 1)d^6ns^2$

B.  $nd^7ns^2$

C.  $(n - 1)d^2ns^2np^6$

D.  $(n - 1)d^7ns^2$ .

**Answer: D**



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**45.** In the transition element the incoming electron occupies  $[n - 1]$  d sublevel in preference to

A. np-level

B. ns-level

C. (n-1) p -level

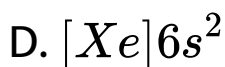
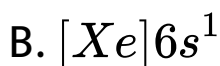
D. (n+1) s-level

**Answer: A**



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**46.** Which one of the following represents the electronic configuration of the most electropositive element?



**Answer: B**



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47. The element whose electronic configuration is  $1s^2, 2s^2 2p^6, 3s^2$  is a / an

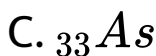
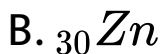
- A. metal
- B. non-metal
- C. metalloid
- D. noble gas

**Answer: A**



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**48.** The element of 4th period of the periodic table having maximum number of unpaired electrons in its ground state is



**Answer: D**



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**49.** Which of the following ions does not have the configuration of argon ?



**Answer: D**



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**50.** Iso-electronic ions are those which have

A. same size

B. same ionisation energy

C. same electronic configuration

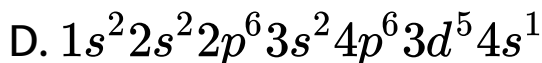
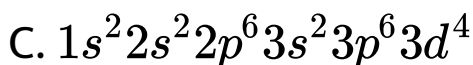
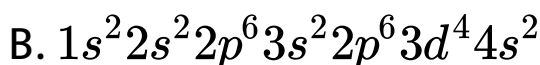
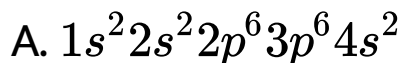
D. same nuclear charge.

**Answer: C**



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51. The electronic configuration of the fourth transition element is

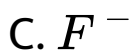
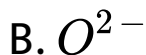
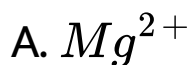


**Answer: D**



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52. which among the following species has the same number of electrons in its outermost as well as penultimate shell ?



**Answer: D**



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53. The general valence shell electronic configuration of transition elements is

A.  $(n - 1)d^{1-10}ns^{0-2}$

B.  $(n - 1)d^{1-10}ns^1$

C.  $(n - 1)d^{1-10}ns^{1-2}$

D.  $(n - 1)d^{1-10}ns^2np^6$

**Answer: C**



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54. The anion  $O^{2-}$  is iso-electronic with



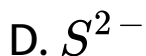
**Answer: C**



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55. In the iso-electronic series :

$K^+$ ,  $Cl^-$ ,  $S^{2-}$ ,  $Ca^{2+}$ , the largest size is of



**Answer: D**



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56. Which among the following is not iso-electronic ?



**Answer: A**



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57. An element of p-block in which last electron enters into s-orbital of valence shell instead of p-orbital is :

A. As

B. Ga

C. No such element in there

D. Helium

**Answer: D**



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**58.** In which of the following compound size of cation to anion ratio is minimum?

A. LiI

B. CsI

C. LiF

D. CsF

**Answer: A**



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**59.** Which of the following is not different for an atom and its corresponding ion ?

A. Number of electrons

B. nuclear charges

C. properties

D. size

**Answer: B**



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**60.** Which of the following elements represents highly electropositive as well as highly electronegativity element in its period. ?

A. nitrogen

B. fluorine

C. hydrogen

D. none

**Answer: C**



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61. In going from fluorine to iodine

- A. Electron affinity increases
- B. size increases
- C. reactivity increases
- D. ionisation energy increases.

**Answer: B**



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**62.** The trend common to both the group 2 and 16 elements in the periodic table is that with increases in atomic number

- A. a maximum valency increase
- B. atomic radius increases
- C. reactivity remains constant
- D. basic strength of hydroxides decreases.

**Answer: B**



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**63.** The element of second period which forms most acidic oxide is

A. fluorine

B. nitrogen

C. boron

D. carbon

**Answer: A**



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**64.** For an element with configuration  $5s^2 4d^{10} 5p^3$  the chemistry is likely to be similar to that of

A. boron

B. oxygen

C. chlorine

D. phosphours

**Answer: D**



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**65.** The element with electronic configuration  $1s^2 2s^2 2p^6 3s^2$  is

- A. member of alkali family
- B. a noble gas
- C. an alkaline earth metal
- D. unpredictable.

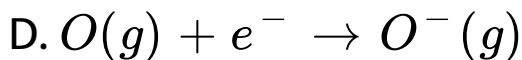
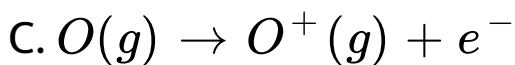
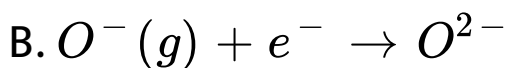
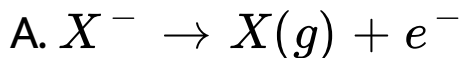
**Answer: C**



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66. Which of the following is energy releasing process ?

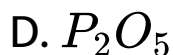
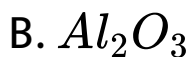


**Answer: D**



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67. Which of the following oxide is amphoteric ?

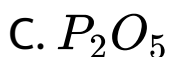
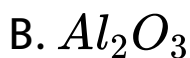


**Answer: B**



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68. Which of the following oxide is most acidic ?



**Answer: D**



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69. Which set of elements have strongest tendency to form anions ?

A. *Na, Cl, Al*

B. *Cu, Ag, Au*

C. *Be, F, N*

D. *F, Cl, Br*

**Answer: D**



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70. In periodic table, melting point/boiling point increases down the group in which of the following group ?

A. group 1

B. group 2

C. group 17

D. group 13

**Answer: C**



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71. Which of the following elements has zero electron affinity ?

A.  $Na$

B.  $Ne$

C.  $F$

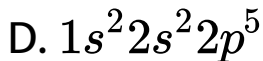
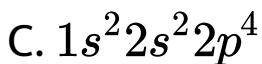
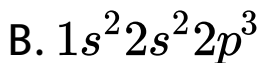
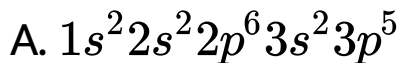
D. None of these

**Answer: B**



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72. Which of the following elements is expected to have highest electron affinity ?

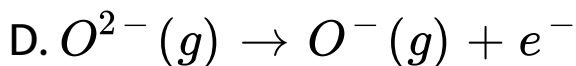
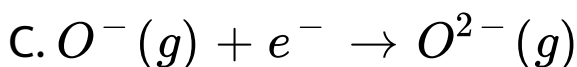
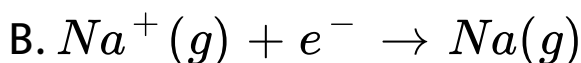
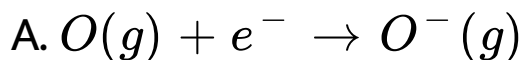


**Answer: A**



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73. Which of the following is an energy consuming process ?



**Answer: C**



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74. The electron affinity of  $Be$  is almost similar to that of

A.  $Li$

B.  $B$

C.  $Na$

D.  $Ne$

**Answer: D**



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75. The correct order of electron affinity of halogens

A.  $\text{F} > \text{Cl} > \text{Br} > \text{I}$

B.  $\text{I} > \text{Br} > \text{Cl} > \text{F}$

C.  $\text{Cl} > \text{F} > \text{Br} > \text{I}$

D.  $\text{Cl} > \text{F} > \text{Br} > \text{I}$

**Answer: C**



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76. From which of the following species in gaseous state it is easiest to remove an electron?

A. O

B.  $O^+$

C.  $O^-$

D.  $O^{2-}$

**Answer: D**



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77. Ionisation energy of  $F^\ominus$  is  $320\text{kJmol}^{-1}$ .

The electron gain enthalpy of fluorine would be

A.  $-320\text{kJmol}^{-1}$

B.  $-160\text{kJmol}^{-1}$

C.  $320\text{kJmol}^{-1}$

D.  $160\text{kJmol}^{-1}$

**Answer: A**



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78. Which of the following represent the correct order of electron affinities?

A.  $F > Cl > Br > I$

B.  $C < N < O < F$

C.  $N < C < O < F$

D.  $C > Si > N > P$

**Answer: C**



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**79.** The most probable reason that the alkaline earth metals give dipositive ions instead of unipositive ions is that

A. the values of their  $IE_1$  and  $IE_2$  are not very different

B. the compound with dipositive ions are highly hydrated in aqueous solution and have high lattice energy in solid state

C. the compound with unipositive ions of these elements are not stable

D. none of the reasons is correct

**Answer: B**



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**80.** Which of the following statement is correct?

A. ionic radius of metal is generally less than its atomic radius

B. atomic radius of non-metals is generally greater than their ionic radius

C. Ionic radius of metal is almost same as its atomic radius

D. ionic radius of metal is greater than its atomic radius

**Answer: A**



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**81.** Which of the following is true about the element with atomic number 18?

A. it has a very low ionisation potential

B. it has a very high electron affinity

C. its molecules are monoatomic

D. its electronegativity is very high.

**Answer: C**



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82. The electronegativity of the following elements increases in the order

A.  $S < P < N < O$

B.  $P < S < N < O$

C.  $N < O < P < S$

D.  $N < P < S < O$

**Answer: B**



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**83.** Electronegativity refers to the tendency of atom to

A. lose electron

B. repel electron

C. share electrons with other atoms

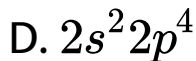
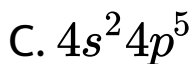
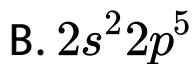
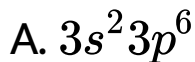
D. attract bonding electrons

**Answer: D**



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**84.** The outer shell configuration of the most electronegative element is



**Answer: B**



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**85.** The outermost electronic configuration of the least reactive element is

A.  $ns^2np^3$

B.  $ns^2np^4$

C.  $ns^2np^5$

D.  $ns^2np^6$

**Answer: D**



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**86.** The correct order of electronegativity of N, O, F and P is

A.  $F > N > P > O$

B.  $F > O > P > N$

C.  $F > O > N > P$

D.  $N > O > F > P$

**Answer: C**



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**87.** Which of the following pairs show diagonal relationship?

A. B,Al

B. Li,Na

C. C,Si

D. B,Si

**Answer: D**



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**88.** Which of the following pairs show diagonal relationship?

A. N,P

B. N,O

C. N,S

D. None of these

**Answer: C**



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**89.** Which of the following sequences contain atomic numbers of only representative elements ?

A. 3,53, 33,87

B. 21,33,54,83

C. 22,23,66,54

D. 3,13,48,53

**Answer: A**



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**90.** What is true about iso-electronic ions ?

- A. They belong to same period
- B. they belong to same group
- C. they belong to same block
- D. their size increases with decreases in nuclear charge

**Answer: D**



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91. Which of the following set of species contains elements which have been named in honour of some countries?

A. Ge, B, Cf

B. Cf, Am, In

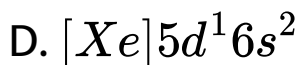
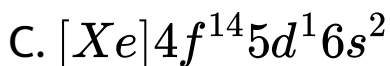
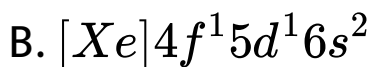
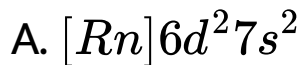
C. Na, Hg, Cf

D. Ru, Am, Ge



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92. Which of the following belongs to d-block?



**Answer: D**



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**93.** Pd has exceptional valence shell electronic configuration of  $4d^{10}5s^0$ . It is a member of-

A. 4 th period, group 11

B. 6 th period, group 9

C. 5 th period, group 10

D. 6 th period, group 10

**Answer: C**



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**94.** An element X has IE and EA respectively 275 and  $1450 \text{ kJ mol}^{-1}$ . The electronegativity of element according to Pauling scale is

A. 240

B. 250

C. 308

D. 402

**Answer: C**



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95. The van der Waal's radii of  $O$ ,  $N$ ,  $Cl$ ,  $F$  and  $Ne$  increase in the order

A.  $f, N, O, Ne, Cl$

B.  $Ne, F, O, N, Cl$

C.  $N, F, O, Ne, Cl$

D.  $F, Cl, O, N, Ne$

**Answer: B**



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**96.** The outer shell configuration and group number of the element with atomic number 107 is

A.  $7s^2$ , 7

B.  $6s^2$ , 2

C.  $7s^2 7p^2$ , 7

D.  $7s^1$ , 15

**Answer: A**



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97. Which of the following pair contains species having nearly same charge density but they do not belong to same group ?

A. Zr,Hf

B.  $Al^{3+}$ ,  $Be^{2+}$

C.  $Fe^{2+}$ ,  $Fe^{3+}$

D.  $Fe^{2+}$ , Co

**Answer: B**



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**98.** According to IUPAC norms an element has been named as Uun. The atomic number of the newly discovered element is

A. 111

B. 112

C. 109

D. 110

**Answer: D**



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**99.** Which of the following has greatest tendency to lose electron ?

A. F

B. Fr

C. S

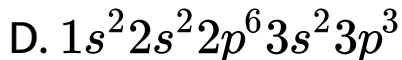
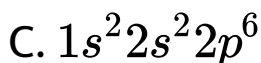
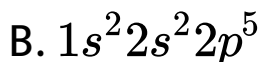
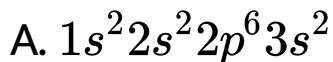
D. Be

**Answer: B**



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**100.** With which of the following configuration the lowest value of first IE is associated



**Answer: A**



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**101.** Which of the following configuration is associated with biggest jump between 2nd and 3rd IE?

A.  $1s^2 2s^2 2p^2$

B.  $1s^2 2s^2 2p^6 3s^1$

C.  $1s^2 2s^2 2p^6 3s^2$

D.  $1s^2 2s^2 2p^1$

**Answer: C**



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**102.** Which of the following does not reflect periodicity of elements ?

A. bonding behaviour

B. O

C. ionisation potential

D. neutron/proton ration

**Answer: D**



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**103.** In the long form of the periodic table, the transition metals are placed in

A. s-block

B. f-block

C. d-block

D. s and p-block

**Answer: C**



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**104.** Which of the following metal requires radiation of highest frequency to cause emission of electrons?

A. Na

B. Mg

C. K

D. Ca

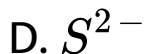
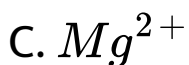
**Answer: B**



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105. Which of the following ions is smallest in size ?



**Answer: C**



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**106.** Which of the following decreases in going down the halogen group ?

- A. ionic radius
- B. atomic radius
- C. ionisation potential
- D. boiling point

**Answer: C**



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**107.** Which of the following elements is/are not liquid at  $30^{\circ}C$  ?

A. Ga

B. Hg

C. Ge

D. Cs

**Answer: B**



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**108.** Of the given alkali metals, the one with smallest size is

A. Rb

B. Cs

C. K

D. Na

**Answer: D**



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**109.** Which among the following elements has lowest value of ionisation potential ?

A. Mg

B. Ca

C. Ba

D. Sr.

**Answer: C**



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**110.** Which among the following elements have lowest value of  $IE_1$ ?

A. Pb

B. Sn

C. Si

D. C

**Answer: B**



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**111.** Which of the following pair of elements belongs period of the periodic table ?

A. P,Se

B. Mg,Sb

C. Ag,Cl

D. Ca,Zn

**Answer: D**



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**112.** The first element of rare earth metals is

A. Cerium

B. Actinium

C. uranium

D. Lanthanum

**Answer: D**



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**113.** The oxide of which of the following elements will be acidic in character.

A. Mg

B. Rb

C. Li

D. Cl

**Answer: D**



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**114.** Generally, the valency of noble gases is

A. zero

B. one

C. three

D. two

**Answer: A**



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**115.** Paulings electronegativity values for elements are useful in predicting

A. polarity of bond in molecules

B. position of elements in electromotive series

C. co-ordination number

D. dipole moment of various molecules.

**Answer: A**



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**116.** The number of elements in the 4th period of periodic table is

- A. 8
- B. 10
- C. 18
- D. 32

**Answer: C**



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**117.** Which period of the periodic table contains maximum number of elements?

A. 2nd

B. 6th

C. 4 th

D. 5 th

**Answer: B**



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**118.** In the second period of periodic table, the ionisation potential of elements increases from left to right because of

- A. increase in densities
- B. decrease in chemical reactivities
- C. decrease in atomic size
- D. decrease in electronegativities

**Answer: C**



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**119.** The valence shell electronic structure of an element is  $ns^2np^2$ . The element will belong to the group of

A. alkali metals

B. inert metals

C. noble gas

D. halogens

**Answer: D**



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**120.** Which of the following pair of atomic numbers represents  $s$  – block element ?

A. 7, 15

B. 6, 12

C. 9, 17

D. 3, 20

**Answer: D**



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121. Atoms with high value of  $IE_1$  always have

- A. large atomic radius
- B. small atomic radius
- C. strongly bound valence electrons
- D. loosely bound valence electrons

**Answer: C**



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**122.** The elements with atomic number 26 will be found in group

A. 2

B. 8

C. 6

D. 10

**Answer: B**



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**123.** Among the following elements which one has the highest value of first ionisation potential ?

A. oxygen

B. argon

C. barium

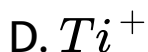
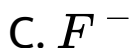
D. cesium

**Answer: B**



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124. Which of the following ion is not isoelectronic with  $O^{2-}$  ?



**Answer: D**



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**125.** The lightest metal is

A. Li

B. Fe

C. Cu

D. Ag

**Answer: A**



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**126.** The melting point is lowest for

A. Be

B. Mg

C. Ca

D. Sr.

**Answer: D**



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127. Among  $O$ ,  $C$ ,  $F$ ,  $Cl$  and  $Br$  the increasing order of atomic radii is

A.  $F < O < C < Cl < Br$

B.  $F < C < O < Cl < Br$

C.  $F < Cl < Br < O < C$

D.  $C < O < F < Cl < Br$

**Answer: A**



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**128.** Which of the following gaseous ion contains maximum number of unpaired electrons?



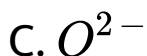
**Answer: D**



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**129.** Which of the following is isoelectronic with carbon?



**Answer: D**



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**130.** The attraction that an atom exerts on a electrons that are being shared with another atom for forming covalent bond is referred to as its

- A. electron affinity
- B. electronegativity
- C. ionisation energy
- D. valency

**Answer: B**



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**131.** The element with atomic number 55 belongs to which block of the periodic table

A. s-block

B. p-block

C. d-block

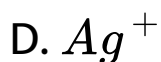
D. f-block

**Answer: A**



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132. Which of the following ions are paramagnetic in character?



**Answer: C**



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**133.** Alkali metals in each period have

A. smallest IE

B. lowest IE

C. highest IE

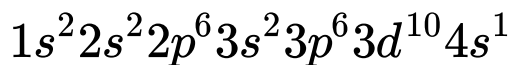
D. highest electronegativity

**Answer: B**



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**134.** Which block of the periodic table contains the element with configuration



A. s-block

B. p -block

C. d-block

D. f-block

**Answer: C**



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**135.** The electronic configuration of an element is  $1s^2 2s^2 2p^6 3s^2 3p^3$ . The atomic number of the element which is just below the above element in the periodic table is

A. 33

B. 34

C. 31

D. 49

**Answer: A**



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**136.** The correct arrangement of increasing order of atomic radius among Na, K, Mg, Rb is

A.  $Mg < K < Na < Rb$

B.  $Mg < Na < K < Rb$

C.  $Mg < Na < Rb < K$

D.  $Na < K < Rb < Mg$

**Answer: B**



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**137.** The properties of the elements are the periodic function of their atomic number. The statement is given by

A. n. bohr

B. J.W. dobereiner

C. D.I . Mendeleev

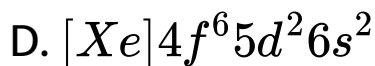
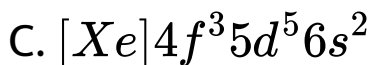
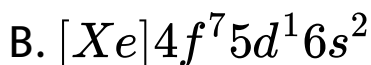
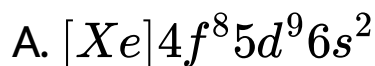
D. H.G. J moseley

**Answer: D**



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**138.** The electronic configuration of gadolinium (Atomic number 64) is

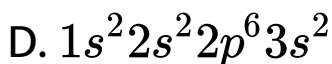
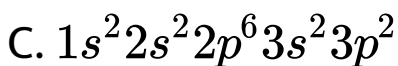
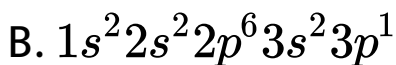
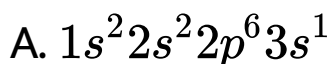


**Answer: B**



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**139.** A sudden large jump between the values of second and third ionisation energies of an element would be associated with the electronic configuration

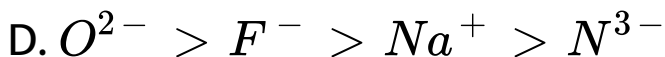
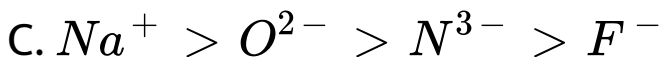
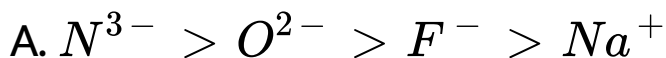


**Answer: D**



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**140.** The ionic radii of  $N^{3-}$ ,  $O^{2-}$ ,  $F^{-}$ ,  $Na^{+}$  follows the order



**Answer: A**



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**141.** In the following, the element with the highest electropositivity is

A. Cu

B. Cs

C. Cr

D. Ba

**Answer: B**



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**142.** Collective name given to the elements with outer shell configuration  $ns^2np^6$  is

- A. chalcogens
- B. alkaline earths
- C. transition elements
- D. nobles gas

**Answer: D**



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**143.** In the periodic table, the element with atomic number 16 will be placed in the group

A. fourteen

B. sixteen

C. thirteen

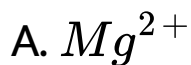
D. fifteen

**Answer: B**



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144.  $Ca^{2+}$  is isoelectronic with



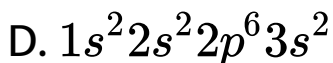
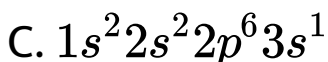
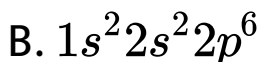
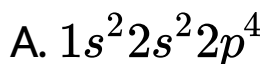
**Answer: C**



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**145.** which of the following configurations represents atoms of the elements having the highest second ionisation energy?



**Answer: C**



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**146.** Gradual addition of electronic shells in the noble gases causes a decrease in their

A. ionisation energy

B. atomic radius

C. boiling point

D. density

**Answer: A**



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**147.** The correct sequence of elements in the decreasing order of first ionisation energy is

A.  $Na > Mg > Al > Si$

B.  $Mg > Na > Al > Si$

C.  $Al > Mg > Na > Si$

D.  $Si > Mg > Al > Na$

**Answer: D**



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**148.** Which of the following statements is correct?

A.  $X^-$  ion is larger in size than  $X$  atom

B.  $X^+$  ion is larger in size than  $X$  atom

C.  $X^+$  ion larger in size than  $X^-$  ion

D.  $X^+$  and  $X^-$  ions are equal in size.

**Answer: A**



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**149.** The correct order of electron affinity of B ,  
C , N and O is

A.  $O > C > N > B$

B.  $B > N > C > O$

C.  $O > C > B > N$

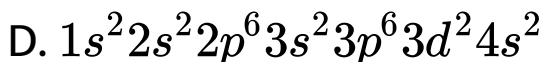
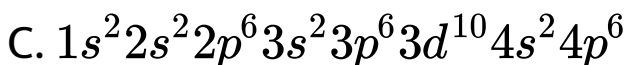
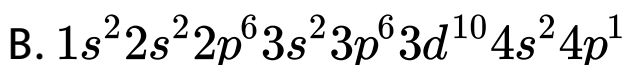
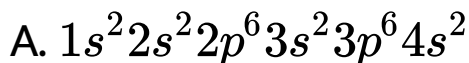
D.  $O > B > C > N$

**Answer: C**



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**150.** Which of the following electronic configurations is of transition elements ?



**Answer: D**



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**151.** The atomic radius of elements of which of the following series would be nearly the same

A. Na,K,Rb,Cs

B. Li,Be,B,C

C. Fe,Co,Ni,Cu

D. F,Cl,Br,I

**Answer: C**



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**152.** With reference to ionisation potential which one of the following sets is correct?

A.  $\text{Li} < \text{K} < \text{Cs}$

B.  $\text{B} < \text{g} < \text{t} < \text{K}$

C.  $\text{Cs} > \text{t} < \text{B}$

D.  $\text{Cs} < \text{t} < \text{K}$

**Answer: B**



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**153.** Which of the following species has the highest ionization potential

A. Ne

B.  $Al^{+}$

C.  $Mg^{+}$

D.  $Li^{+}$

**Answer: D**



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**154.** The radii of  $F$ ,  $F^-$ ,  $O$  and  $O^{2-}$  are in the order of

A.  $O^{2-} > O > F^- > F$

B.  $F^- > O^{2-} > F > O$

C.  $O^{2-} > F^- > F > O$

D.  $O^{2-} > F^- > O > F$

**Answer: D**



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**155.** Which has maximum first ionization potential?

A. carbon

B. oxygen

C. nitrogen

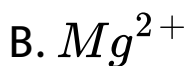
D. boron

**Answer: C**



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**156.** Which of the following has the smallest size?



**Answer: D**



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**157.** Which of the following elements has the maximum electron affinity ?

A. F

B. S

C. O

D. Cl

**Answer: D**



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**158.** Which of the following order for ionization energy is correct ?

A.  $Be > B > C > N > O$

B.  $B < Be < C < O < N$

C.  $B < Be < C < N < O$

D.  $B < Be < N < C < O$

**Answer: B**



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**159.** Which of the following is most electro-negative ?

A. carbon

B. silicon

C. lead

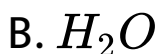
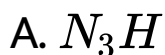
D. tin

**Answer: A**



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**160.** Which of the following is isoelectronic as well as has the same structure as that of  $N_2O$  ?



**Answer: D**



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**161.** Which of the following are isoelectronic species

A. I,II,III

B. II,III,IV

C. I,II,IV

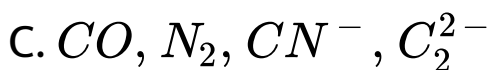
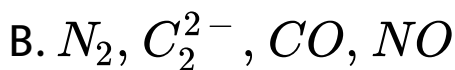
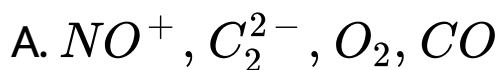
D. II and I

**Answer: B**



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162. Among the following groupings which represents the collection of isoelectronic species?



**Answer: C**



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**163.** Which one of the following arrangements not truly represent the property indicated against it?

A.  $Br_2 < Cl_2 < F_2$  , electronegativity

B.  $Br_2 < F_2 < Cl_2$ , electron affinity

C.  $Br_2 < Cl_2 < F_2$ , bond energy

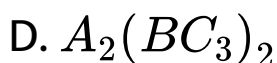
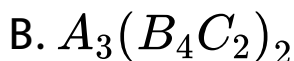
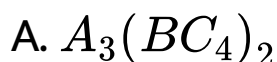
D.  $Br_2 < Cl_2 < F_2$ , oxidising power

**Answer: C**



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**164.** A compound contains three elements  $A$ ,  $B$  and  $C$ , if the oxidation number of  $A = +2$ ,  $B = +5$  and  $C = -2$  then possible formula of the compound is



**Answer: A**



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**165.** Which of the following statements is true ?

- A. All metal nitrates are soluble in  $H_2O$
- B. All metal nitrates are insoluble in water
- C. solubility depends upon temperature
- D. either A or B

**Answer: A**



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**166.** The valence shell of transition element consists of

- A. nd orbitals
- B. (n-1)d-orbitals
- C. ns-np-nd orbitals
- D. (n-1) d ns np orbitals

**Answer: B**



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**167.** The correct order of electron affinity is

A.  $\text{FgtClgtBr}$

B.  $\text{BrgtClgtF}$

C.  $\text{ClgtFgtBr}$

D.  $\text{FgtBrgtCl}$

**Answer: C**



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**168.** Which one of the following is correct order of the size?

A.  $\text{Na} < \text{Mg} < \text{K}$

B.  $\text{Cl} < \text{P} < \text{Br}$

C.  $\text{O}^{2-} < \text{F}^{-} < \text{Mg}^{+2}$

D.  $\text{I}^{-} < \text{I} < \text{I}^{+}$

**Answer: B**

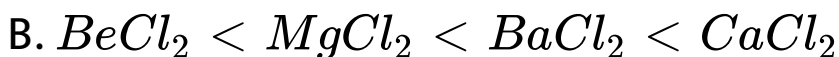
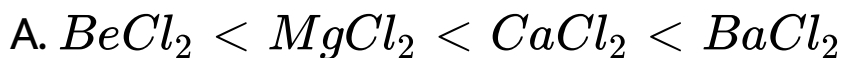


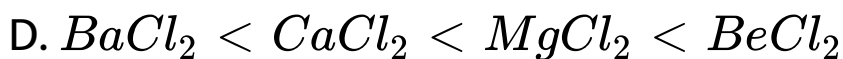
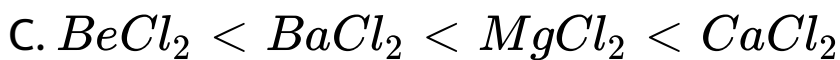
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**169.** According to Fajans'rules, the percentage of covalent character in an ionic compound increase if the cation is highly charged or small in size and the anion is large or cation has pseudoinert gas configuration. As a result of the increased covalent character, solubility in less polar solvent increases and the melting point decreases.

The correct order of increasing ionic character is





**Answer: A**



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**170.** Variable valency is characteristic of

A. halogen

B. transition elements

C. alkali metals

D. noble gas

**Answer: B**



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**171.** Which of the following has least electron affinity?

A. O

B. N

C. Ar

D. F

**Answer: C**



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**172.** In the modern long form of the periodic table, elements are arranged in the increasing order of

A. atomic mass

B. atomic number

C. mass number

D. isotopic number

**Answer: B**



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**173.** An element of atomic number 29 belongs to which of the following block of the periodic table ?

A. s-block

B. p-block

C. f-block

D. d-block

**Answer: D**



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**174.** The ionisation potential is lowest for the

A. halogens

B. inert gas

C. alkaline earth metals

D. alkali metals

**Answer: D**



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**175.** The element with highest electron affinity among the halogens is

A. F

B. Cl

C. Br

D. I.

**Answer: B**



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**176.** Which of the following sets of atomic numbers belongs to that of alkali metals?

A. 1,12,30,4,62

B. 37,19,3,55



C. 9,17,35,53

D. 12,20,56,88

**Answer: B**



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**177.** Which of the following statement about fluorine is not correct?

A. electron affinity of chlorine is greater than that of fluorine

B. bond energy of fluorine is less than that of chlorine

C. fluorine cannot be prepared by electrolysis of fused metal fluorides

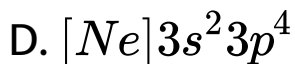
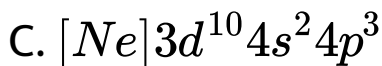
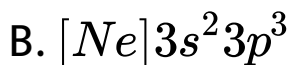
D. fluorine does not form fluorides

**Answer: C**



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**178.** Ionisation energy is highest in



**Answer: B**



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**179.** The atomic radius increases as we move down a group because

- A. Effective nuclear charge increases
- B. atomic mass increases
- C. additive electrons are accommodated in  
new electron level
- D. atomic number increases.

**Answer: C**



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**180.** Which one of the following pairs of atomic numbers, represents elements belonging to the same group?

A. 11 and 20

B. 12 and 30

C. 13 and 31

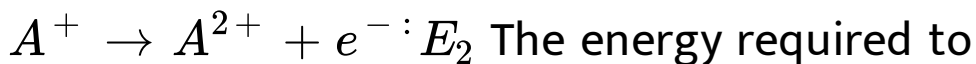
D. 14 and 33

**Answer: C**



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**181.** Consider the following changes



The energy required to pull out the two electrons are  $E_1$  and  $E_2$

respectively. The correct relationship between

two energies would be

A.  $E_1 < E_2$

B.  $E_1 = E_2$

C.  $E_1 > E_2$

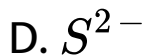
D.  $E \geq E_2$

**Answer: A**



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**182.** The isoelectronic ion having lowest ionisation energy is

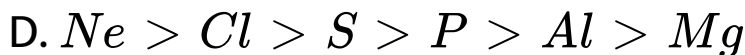
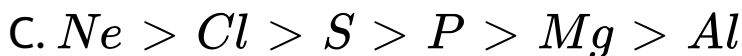
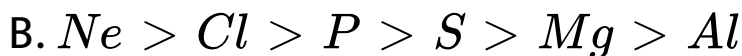
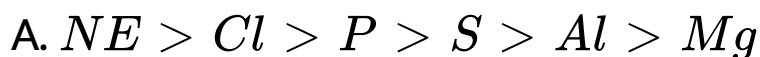


**Answer: D**



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**183.** The decreasing order of the ionization potential of the following elements is





**Answer: B**



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**184.** Which of the following does not exhibit the periodicity in properties of the elements?

A. ionisation energy

B. N/P ratio

C. electronegativity

D. atomic radius

**Answer: B**



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**185.** Which one of the following is an incorrect statement?

A. the ionisation potential of nitrogen is greater than that of oxygen

B. the electron affinity of fluorine is greater than that of chlorine

C. the ionization potential of beryllium is greater than that of boron

D. the electronegativity of fluorine is greater than that of chlorine.

**Answer: B**



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**186.** The electronic configuration of element  $A$ ,  $B$ , and  $C$  are  $[He]2s^1$ ,  $[Ne]3s^1$ , and  $[Ar]4s^1$ , respectively. Which one of the

following order is correct for the  $IE_1$  (in  $kJmol^{-1}$ ) of  $A, B$ , and  $C$ ?

A.  $A > B > C$

B.  $C > B > A$

C.  $B > C > A$

D.  $C > A > B$

**Answer: A**



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**187.** Which among the following species has the highest ionisation energy ?

A. Ne

B. F

C. Li

D. B.

**Answer: A**



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**188.** Eka-aluminium and Eka-silicon are known as :

A. Gallium and Germanium

B. Aluminium and Silicon

C. Iron and Sulphur

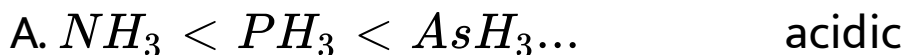
D. Proton and Silicon

**Answer: A**

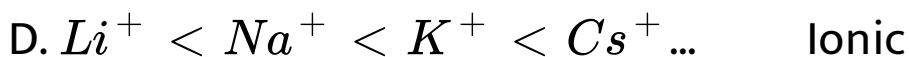
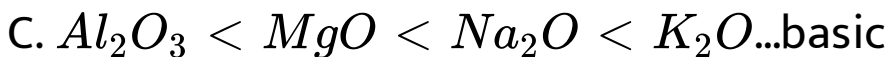


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189. Which of the following order is wrong-



character



character

**Answer: B**



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**190.** Which is true about the electronegative order of the following elements ?

A.  $\text{PgtSi}$

B.  $\text{CgtN}$

C.  $\text{BrgtCl}$

D.  $\text{SrgtCa}$

**Answer: A**



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**191.** The element with atomic number 56 belongs to which block ?

A. s

B. p

C. d

D. f

**Answer: A**



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**192.** Which of the following order is correct for the first ionization potential of  $B$ ,  $C$ , and  $N$ ?

A.  $B < C < N$

B.  $N < C < B$

C.  $N < B < C$

D.  $N < C < B$

**Answer: B**



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**193.** Electron affinity depends on

A. atomic size

B. atomic charge

C. atomic number

D. atomic size and nuclear charge both .

**Answer: D**



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**194.** Which of the following is correctly matched?

A. C-C bond length -0.077 nm

B. ionic radius of  $Na^+$  -0.136 nm

C. C-Cl bond length -0.176 nm

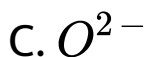
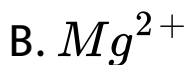
D. ionic radius of  $F^-$  -0.095 nm

**Answer: C**



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**195.** Which of the following is not isoelectronic ?



**Answer: D**



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**196.** Two elements whose electronegativities are 1.2 and 3.0 the bond formed between them would be

A. ionic

B. covalent

C. coordinate

D. metallic

**Answer: A**



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197. The ions  $O^{2-}$ ,  $F^{-}$ ,  $Na^{+}$ ,  $Mg^{2+}$ , and  $Al^{3+}$  are isoelectronic. Their ionic radii show

- A. a decreases from  $O^{2-}$  to  $F^{-}$  and then increases from  $Na^{+}$  to  $Al^{3+}$
- B. a significant increase from  $O^{2-}$  to  $Al^{3+}$
- C. a significant decrease from  $O^{2-}$  to  $Al^{3+}$
- D. an increases from  $O^{2-}$  to  $F^{-}$  and then decrease from  $Na^{+}$  to  $Al^{3+}$ .

**Answer: C**



**198.** According to the Periodic Law of elements, the Variation in properties of elements is related to their ?

A. atomic masses

B. nuclear masses

C. atomic number

D. nuclear neutron-proton number ratios.

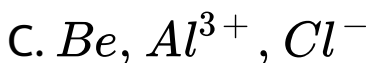
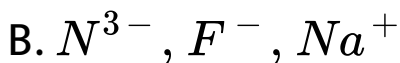
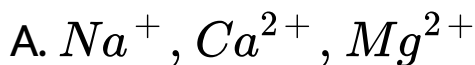
**Answer: C**





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**199.** Which one of the following groupings represents a collection of isoelectronic species ?



**Answer: B**



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200. Arrange in order of increasing I.P.

A.  $Mg < Al < Si < P$

B.  $Al < Si < P < Mg$

C.  $Si < P < Mg < Al$

D.  $Al < Mg < Si < P$

Answer: D



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**201.** Number of elements present in 5th period is

A. 8

B. 18

C. 32

D. 24

**Answer: B**



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**202.** What is the general outer electronic configuration of the coinage metals ?

A.  $ns^2np^6$

B.  $(n - 1)d^{10}ns^1$

C.  $(n - 1)d^{10}ns^2$

D.  $(n - 1)d^9ns^2$

**Answer: B**



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**203.** How does the ionisation energy of 1st group elements vary ?

- A. increases down the group
- B. decrease down the groups
- C. remains unchanged
- D. variation is not regular

**Answer: B**



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**204.** The electron gain enthalpy values (in  $\text{kJmol}^{-1}$ ) of three halogens, X, Y and Z are respectively -349, -333 and -325. Then X, Y and Z are respectively

A.  $F_2$ ,  $Cl_2$  and  $Br_2$

B.  $Cl_2$ ,  $F_2$  and  $Br_2$

C.  $Cl_2$ ,  $Br_2$  and  $F_2$

D.  $Br_2$ ,  $Cl_2$  and  $F_2$

**Answer: B**



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**205.** An atom with high electronegativity has

- A. large size
- B. high ionization potential
- C. low electron affinity
- D. low ionization potential

**Answer: B**



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**206.** In any period of the periodic table, valency of an element with respect to oxygen

A. increases one by one from IA to VII A

B. decreases one by one from IA to VII A

C. increases one by one from I A to IV A and

then decreases from VA to VII A one by one

D. decreases one by one from IA to IV A and

then increases from VA to VII A one by one



**Answer: A**



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**207.** For the electron affinity of halogens (with  $-ve$  sign), which of the following is correct?

A.  $\text{Br} > \text{F}$

B.  $\text{F} > \text{Cl}$

C.  $\text{Br} > \text{Cl}$

D.  $\text{F} > \text{I}$

**Answer: D**



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**208.** The elements with atomic numbers 9, 17, 35, 53, 85 and all

- A. noble gases
- B. halogens
- C. heavy metals
- D. light metals

**Answer: B**



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**209.** In a given shell, the order of screening effect is

A.  $s > p > d > f$

B.  $f > d > p > s$

C.  $p < d < s < f$

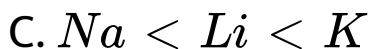
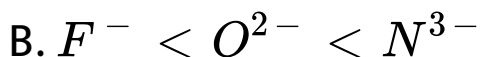
D.  $d > f < s > p$

**Answer: A**



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**210.** Correct order of radii is

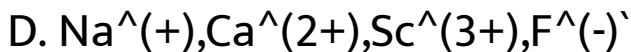
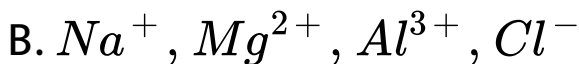
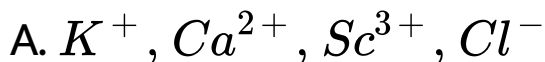


**Answer: B**



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**211.** Which one of the following sets of ions represents the collection of isoelectronic species?

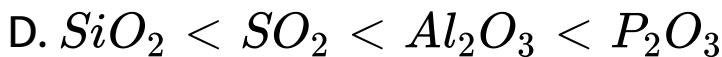
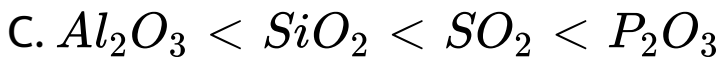
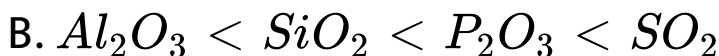
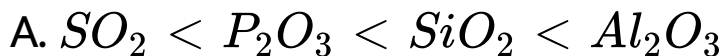


**Answer: A**



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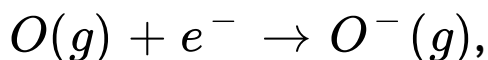
212. Among  $Al_2O$ ,  $SiO_2$ ,  $P_2O_3$  and  $SO_2$  the correct order of acid strength is



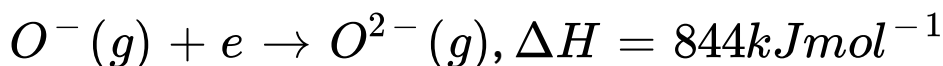
**Answer: B**



**213.** The formation of the oxide ion  $O^{2-}(g)$  requires first an exothermic and then an endothermic step as shown below:



$$\Delta H = -142 \text{ kJ mol}^{-1}$$



This is because:

A. oxygen is more electronegative

B.  $O^-$  ion has comparatively larger size than oxygen atom

C.  $O^-$  ion will tend to resist the addition of another atom

D. oxygen has high electron affinity.

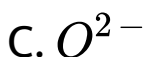
**Answer: C**



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**214.** Which one of the following ions has the highest value of ionic radius?



**Answer: C**



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**215.** Ionic radii are

A. directly proportional to square of effective nuclear charge

B. inversely proportional to effective nuclear charge

C. inversely proportional to square of effective nuclear charge

D. directly proportional to effective nuclear charge.

**Answer: B**



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**216.** Four successive members of the first row transition elements are listed below with their atomic number. Which one of them is expected to have the highest third ionisation enthalpy ?

A. vanadium ( $Z=23$ )

B. chromium ( $Z=24$ )

C. iron ( $Z=26$ )

D. maganese ( $Z=25$ )

**Answer: D**



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**217.** Which of the following oxides is amphoteric in nature ?

A.  $\text{CaO}$

B.  $\text{CO}_2$

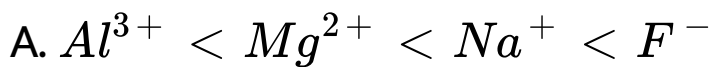


**Answer: D**



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**218.** In which of the following arrangements the order is NOT according to the property indicated against it ?



increasing ionic size

B.  $B < Cl < N < O$  increasing first ionisation

energy

C.  $Li < Br < F < Cl$  increasing electron gain

enthalpy (without negative charge)

D.  $Li < Na < K < Rb$  increasing metallic radius .

**Answer: B**



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**219.** Which one of the following arrangements represents the correct order of electron gain enthalpy of the given atomic species?

A. ClItFltSlto

B. OltsltFltCl

C. SltoItClItF

D. FltClItOlts

**Answer: A**



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**220.** Order of first ionisation potentials of elements  $Li$ ,  $Be$ ,  $B$ ,  $Na$  is

A.  $Li < Be < B < Na$

B.  $Be < B < Li < Na$

C.  $Be < Li < B < Na$

D.  $B < Be < Li < Na$

**Answer: B**



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221. Which of the following is an inert gas?

A.  $H_2$

B.  $O_2$

C.  $N_2$

D. Argon

**Answer: D**



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**222.** Identify the correct order in which the covalent radius of the following elements increases ?

(i) *Ti* (ii) *Ca*

(iii) *Sc*

A. (I) ,II,III

B. III,II,I

C. III,I,III

D. I,III,II

**Answer: D**



**223.** Match list I with list II and select the correct answer using the code given below

List I (Successive ionisation energies)				List II (Elements)	
	$IE_1$	$IE_2$ ( $\text{kJmol}^{-1}$ )	$IE_3$		
1.	2080	3963	6130	(a)	H
2.	520	7297	11810	(b)	Li
3.	900	1758	14810	(c)	Be
4.	800	2428	3660	(d)	B
				(e)	Ne

A. 1.c,2. b,3.d ,4.e

B. 1. a,2. c, 3. b, 4.d

C. 1. d, 2. a, 3. b , 4. d

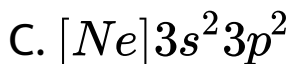
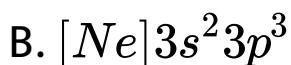
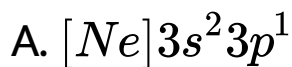
D. 1. e, 2. b, 3. c, 4. d

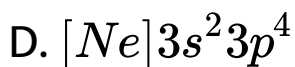
**Answer: D**



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**224.** In the following, the element with the highest ionization energy is



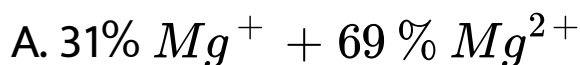


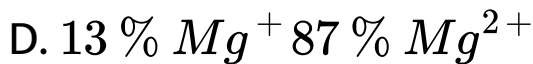
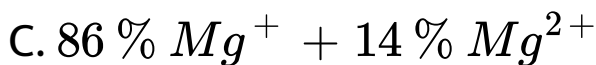
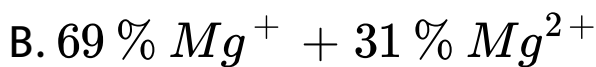
**Answer: B**



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**225.** One mole of magnesium in the vapor state absorbed  $1200\text{kJmol}^{-1}$  of energy. If the first and second ionization energies of  $Mg$  are  $750$  and  $1450\text{kJmol}^{-1}$ , respectively, the final composition of the mixture is





**Answer: B**



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**226.** The successive ionization energy values for an element X are given below:

(1) 1st ionization energy =  $410 \text{ kJ mol}^{-1}$  (2) 2nd ionization energy =  $820 \text{ kJ mol}^{-1}$  (3) 3rd

ionization energy =  $1100 \text{ kJ mol}^{-1}$  (4) 4th

ionization energy =  $1500 \text{ kJ mol}^{-1}$  (5) 5th

ionization energy =  $3200 \text{ kJ mol}^{-1}$

Find out the number of valence electrons for the atom X

A. 1st ionization energy =  $410 \text{ kJ mol}^{-1}$

B. 2nd ionization energy =  $820 \text{ kJ mol}^{-1}$

C. 3rd ionization energy =  $110 \text{ kJ mol}^{-1}$

D. 4th ionization energy =  $1500 \text{ kJ mol}^{-1}$

**Answer: A**



**227.** Among the following transition elements, pick out the element/elements with highest second ionization energy

(a) V (At. No. 23) (v) Cr (At. No. 24)

(c) Mn (At. No. =25) (d) Cu (At. No. =29)

(e) Zn (At. No.=30)

A. a and c

B. b and d

C. only c



D. only d

**Answer: B**



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**228.** Which of the following species has the highest electron affinity?



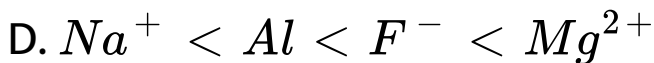
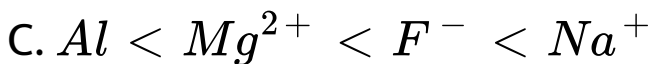
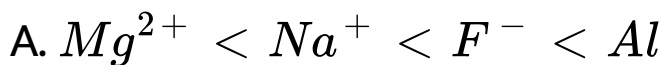


**Answer: B**



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**229.** The correct order of atomic sizes is

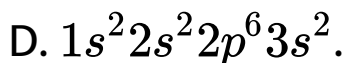
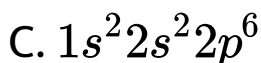
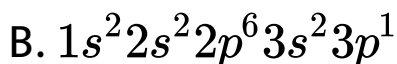
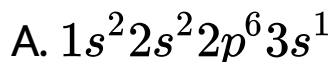


**Answer: D**



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**230.** Which electronic configuration of an element has abnormally high difference between second and third ionization energy?

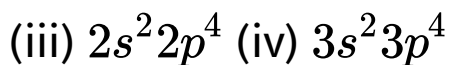
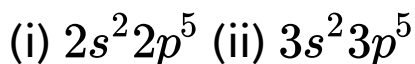


**Answer: A**



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**231.** The electronic configurations of four elements are given below. Arrange these elements in the correct order of the magnitude (without sign) of their electron affinity



Select the correct answer using the codes given below:

A. itiiltivltiii

B. iiltiltivltiii

C. I ltiiltivltii

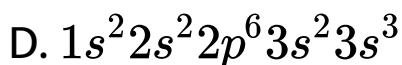
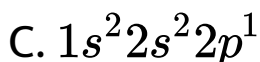
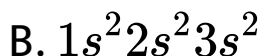
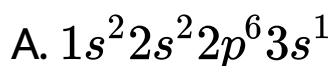
D. iiltivltiilti

**Answer: D**



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**232.** The electronic configuration of the atom having maximum difference in first and second ionization enthalpies is



**Answer: C**



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**233.** Which of the following two elements in the periodic table are expected to combine in the most violent fashion?

A. H and O

B. Cl and F

C. Mg and N

D. Cs and F

**Answer: A**



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**234.** An element X belongs to fourth period and fifteenth group of the periodic table. Which one of the following is true regarding the outer- electronic configuration of X ? It has

A. partially filled d-orbitals and completely filled s- orbitals

B. completely filled s-orbitals and completely filled p-orbitals

C. completely filled s-orbitals and half filled p-orbitals



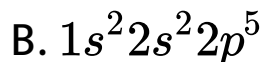
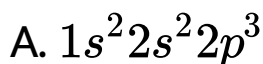
D. half filled d-orbitals and completely filled  
s-orbitals

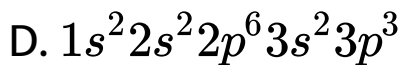
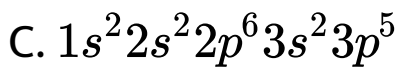
**Answer: C**



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**235.** The electronic configuration of the element with maximum electron affinity is





**Answer: C**



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**236.** The first ionization energy of oxygen is less than that of nitrogen. Which of the following is the correct reason for this observation?

A. Lesser effective nuclear charge of oxygen than nitrogen

B. lesser atomic size of oxygen than nitrogen

C. greater interelectron repulsion between counter balances the increases in effective nuclear charge on moving from nitrogen to oxygen

D. greater effective nuclear charge of oxygen than nitrogen

**Answer: C**



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**237.** The number of unpaired electrons in gaseous species of  $Mn^{3+}$ ,  $Cr^{3+}$  and  $V^{3+}$  respectively are.....and most stable species is.....

A. 4,3 and 2 and  $V^{3+}$  is most stable

B. 3,3 and 2 and  $Cr^{3+}$  is most stable

C. 4,3 and 2 and  $Cr^{3+}$  is most stable

D. 3,7 and 3 and  $Mn^{3+}$  is most stable

**Answer: C**



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**238.** Which is the wrong order for the stated property ? .

A. Ba < Sr < Mg , atomic radius

B. F < O < N , first ionization energy

C. Cl < F < I , electron affinity

D. OgtSegtTe, electronegativity

**Answer: C**



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**239.** Lattice energy of an ionic compound depends upon :

A. charge on the ion only

B. size of the ion only

C. charge on the ion and size of the ion

D. packing of the ions only

**Answer: B**



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**240.** Which one of the following order is correct for the first ionisation energies of the elements?

A.  $\text{Bl} < \text{Be} < \text{Mn} < \text{I} < \text{O}$

B.  $\text{Be} < \text{I} < \text{Bl} < \text{N} < \text{O}$

C. BltBeMOltN

D. BltOltBeltN

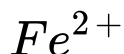
**Answer: C**



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**241.** Which one of the following statements is correct?

A. ionic radius of  $Fe^{3+}$  is greater than





B. atomic radius of chlorine atom is greater than ionic radius of chloride ion

C. electron affinity of phosphorus is greater than nitrogen

D.  $Cs_2O$  is strongly acidic in nature.

**Answer: C**



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**242.** Correct sequence of increasing order of ionization energy is

A.  $\text{I} < \text{Br} < \text{Cl}$

B.  $\text{Cl} < \text{Br} < \text{I}$

C.  $\text{Cl} < \text{I} < \text{Br}$

D.  $\text{I} < \text{Cl} < \text{Br}$

**Answer: C**



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**243.** Which of the following species has the highest electron affinity?



**Answer: A**



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**244.** The ratio of the radii of the nucleons of

${}^4_2\text{He}$  and  ${}^1_1\text{H}$  is

A. 4

B. 2

C. 3

D. 1.6

**Answer: C**



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**245.** The ionisation potential of hydrogen atom is 13.6 volt. The energy required to remove an electron in the  $n = 2$  state of the hydrogen atom is

A. 27.2 ev

B. 13.6 ev

C. 6.8 eV

D. 3.4 eV

**Answer: D**



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**246.** The first ionisation potential of  $Na$ ,  $Mg$ ,  $Al$  and  $Si$  are in the order

A.  $Na < Mg < Al < Si$

B.  $Na > Mg > Al > Si$

C.  $Na > Mg < Al > Si$

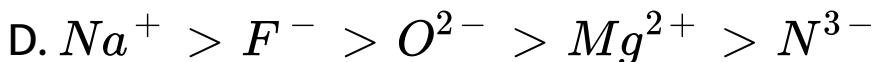
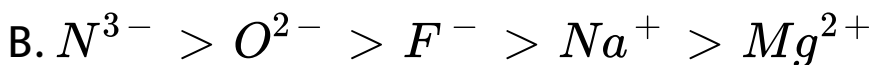
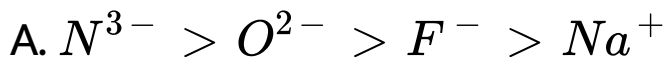
D.  $Na > Mg > Al < Si$

**Answer: A**



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247. What is the correct decreasing order of ionic radii of following ions?



**Answer: B**



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**248.** Generally, the first ionization energy increases along a period. But there are some exceptions. One which is NOT an exception is.....

A. N and O

B. Na and Mg

C. Mg and Al

D. Be and B

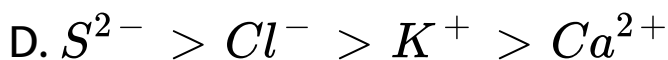
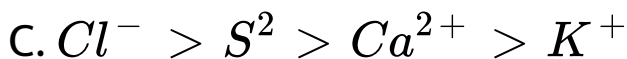
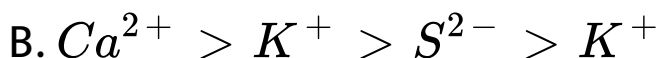
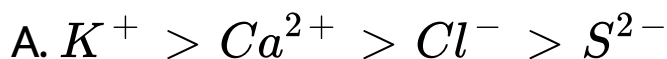
**Answer: B**



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**249.** The correct order of decreasing ionic radii among the following isoelectronic species is



**Answer: D**



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**250.** Among the following, the third ionisation energy is highest for

A. magnesium

B. boron

C. beryllium

D. aluminium

**Answer: C**



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**251.** Which of the element is expected to have lowest first ionisation enthalpy

A. Sr

B. Al

C. Xe

D. S.

**Answer: A**



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**252.** Generally, the first ionisation energy increases along a period. But there are some exceptions one which is not an exception is

A. N and O

B. Na and Mg

C. Mg and Al

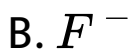
D. Be and B

**Answer: B**



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253. The highest electron affinity is shown by



**Answer: A**



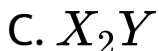
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**254.** The electronic configuration of two elements  $X$  and  $Y$  are given below:

$$X = 1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 \quad \text{and} \quad Y =$$

$$1s^2 2s^2 2p^6 3s^2 3p^5$$

The formula of the ionic compound can be formed between these elements is



**Answer: B**



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**255.** In the periodic table, the basic character of oxides

A. increases from left to right and decreases from top to bottom

B. decreases from right to left and increases from top to bottom

C. decreases from left to right and

increases from top to bottom

D. decreases from left to right and

increases from bottom to top

**Answer: C**



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**256.** Which of the following orders regarding ionisation energy is correct?



A.  $N > O > F$

B.  $N < O < F$

C.  $N > O < F$

D.  $N < O > F$

**Answer: C**



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**257.** Among the following which has the highest cation to anion size ratio ?

A. CsI

B. CsF

C. LiF

D. NaF

**Answer: B**



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**258.** Which of the following two elements in the periodic table are expected to combine in the most violent fashion?

A. H and O

B. Cl and F

C. Mg and N

D. P and O

**Answer: B**



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**259.** The diagonal partner of B is

A. Li

B. Al

C. Si

D. Mg.

**Answer: C**



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**260.** The outer electronic configuration of Gd (At.No. 64) is

A.  $4f^8 5d^5 6s^2$

B.  $4f^8 5d^0 6g^2$

C.  $4f^4 5d^4 6s^2$

D.  $4f^7 5d^1 6s^2$

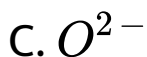
**Answer: D**



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**261.** Which of the following has the highest size ?

A.  $S^{2-}$



**Answer: D**



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**262.** The correct decreasing order of first ionisation enthalpies of five elements of second period is

A.  $Be > B > C > N > F$

B.  $N > F > C > B > Be$

C.  $F > N > C > Be > B$

D.  $N > F > B > C > Be$

**Answer: C**



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**263.** The second ionization energies of Li, Be, B and C are in the order

A.  $Li > C > B > Be$

B.  $Li > B > Be > C$

C.  $B > C > Be > Li$

D.  $Be > C > B > Li$

**Answer: B**



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**264.** Identify the wrong statements in the following



A. amongst isoelectric species, smaller the positive charge on cation, smaller is the ionic radius

B. amongst iso electronic species, greater is the negative charge on the anion, larger is the ionic radius .

C. atomic radius of the elements increases as one moves down the first group of the periodic table

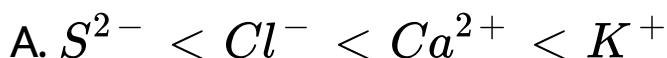
D. atomic radius of the elements decreases  
as one moves across from left to right in  
the second period of the periodic table.

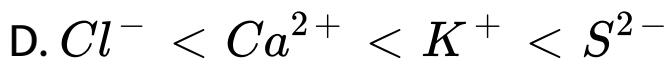
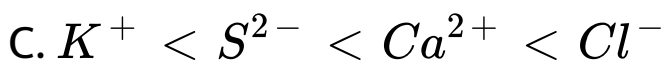
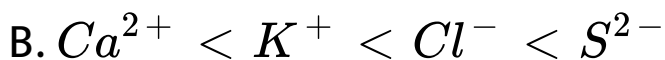
**Answer: A**



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**265.** The increasing order of the ionic radii  
among the following isoelectronic species is





**Answer: B**



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**266.** The element with positive electron gain enthalpy is

A. hydrogen

B. sodium

C. oxygen

D. neon

**Answer: D**



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**267.** The correct order of electronegativities of N, O, F and P is

A.  $F > N > P > O$

B.  $F > O > P > N$

C.  $F > O > N > P$

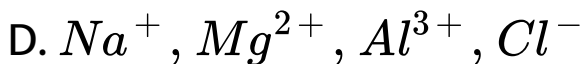
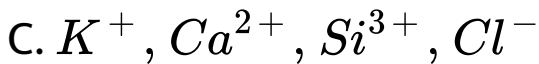
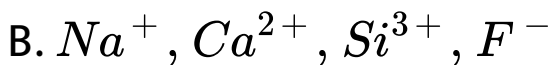
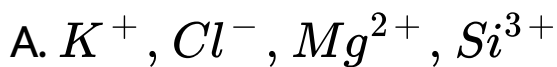
D.  $N > O > F > P$

**Answer: C**



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**268.** Which one of the following sets of ions represents the collection of isoelectronic species?



**Answer: C**



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**269.** Which of the following represents the correct order of increasing first ionisation enthalpy for  $Ca$ ,  $Ba$ ,  $Se$ , and  $Ar$ ?

A.  $\text{Ca}^{2+}\text{Ba}^{2+}\text{Sr}^{2+}\text{Sr}^{2+}\text{Ar}$

B.  $\text{Ca}^{2+}\text{Ba}^{2+}\text{Ba}^{2+}\text{Sr}^{2+}\text{Ar}$

C.  $\text{Sr}^{2+}\text{Sr}^{2+}\text{Ca}^{2+}\text{Ba}^{2+}\text{Ar}$

D.  $\text{Ba}^{2+}\text{Ca}^{2+}\text{Sr}^{2+}\text{Sr}^{2+}\text{Ar}$

**Answer: D**



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**270.** The first ionisation potential of  $\text{Na}$  is  $5.1\text{eV}$ . The value of electron gain enthalpy of  $\text{Na}^+$  will be

A.  $+2.55eV$

B.  $-2.55eV$

C.  $-5.1eV$

D.  $-10.2eV$

**Answer: C**



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**271.** the correct order of electron gain enthalpy with negative sign of



$F$ ,  $Cl$ ,  $Br$  and  $I$  , having atomic number 9, 17, 35 and 53 respectively is

A.  $IgtBrItClgtF$

B.  $FgtClgtBrgtI$

C.  $ClgtFgtBrgtI$

D.  $BrgtClgtIgtF$

**Answer: C**



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272. Considering the elements  $B$ ,  $Al$ ,  $Mg$  and  $K$ , the correct order of their metallic character is

A.  $B < Al < Mg < K$

B.  $B < Mg < Al < K$

C.  $Mg < B < Al < K$

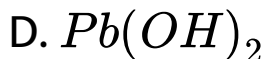
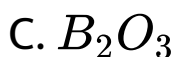
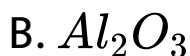
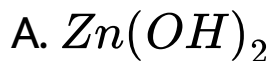
D.  $Mg < Al < B < K$

**Answer: A**



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**273.** Which of the following are amphoteric in nature ?

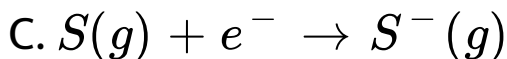
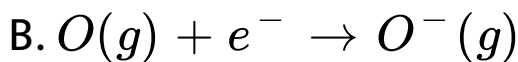
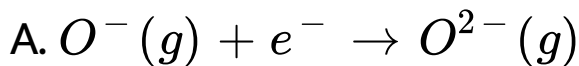


**Answer: A::B::D**



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274. Which of the following process do not involve absorption of energy ?



**Answer: B::C**



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**275.** The elements which are radioactive and have been named after the name of planet are

A. Hg

B. Ra

C. Np

D. Pu

**Answer: C::D**



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**276.** Which of the following properties show similar trends down the group among the elements of group 1 and 17?

A. Metallic character

B. mp/bp

C. reactivity

D. electronegativity

**Answer: A::D**



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**277.** Which of the following pairs contain elements with similar atomic radii ?

A. Co,Sc

B. Zr,Mo

C. Na,K

D. Hf,Zr

**Answer: A**



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**278.** The number of which subatomic particle is same in case of chlorine atom and chloride ion?

A. neutrons

B. nuclear charges

C. size

D. electrons

**Answer: A::B**



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**279.** Which of the following statements are correct?

A. Cl has highest  $EA_1$  among all the known elements

B. Cl is most electronegativity element in periodic table

C. both Br and Hg elements are liquid at room temperature

D. Atomic radius of noble gas is lowest in their respective periods.

**Answer: A::C**



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**280.** Which of the following parameter cannot be estimated by using Born-Haber cycle?

A. Hydration energy

B. electron affinity

C. electronegativity

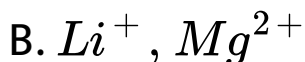
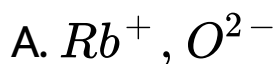
D. binding energy of electrons.

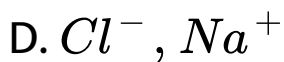
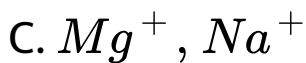
**Answer: C::D**



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**281.** Which of the following pairs of species have nearly same size?





**Answer: A::B**



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**282.** The correct order of the second ionisation potential of carbon, nitrogen, oxygen and fluorine is

A. CgtNgtOgtF

B. OgtNgtFgtC

C. OgtFgtNgtC

D. FgtOgtNgtC

**Answer: C**



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**283.** The correct order of  $IE_2$  of  $C$ ,  $N$ ,  $O$  and  $F$  is

A. CgtNgtOgtF

B. OgtNgtFgtC

C. OgtFgtNgtC

D. FgtNgtOgtC

**Answer: D**



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**284.** Atomic radii of fluorine atom and neon atom in angstrom units are respectively given by  
A) 0.762, 1.60    B) 1.60, 1.60    C) 0.72, 0.72  
D) 1.60, 0.762

A. 0.72,1.60

B. 1.60 , 1.60

C. 0.72, 0.72

D. None of these



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**285.** The electronegativity of the following elements increases in the order

A. C,N,Si,P

B. N,Si,C,P

C. Si,P,C ,N

D. P,Si,N,C

**Answer: C**



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**286.** The value in electron-volt per atom which represent the first ionisation energy of oxygen and nitrogen atom respectively are



A. 41.6,13.6

B. 13.6 , 14.6

C. 13.6 , 13.6

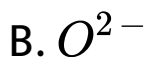
D. 14.6,14.6

**Answer: B**



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**287.** Which one of the following is the smallest in size?



**Answer: D**



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**288.** Which of the following statements is/are false for the long form of the periodic table?

- A. it reflects the sequence of filling of electrons in order of sub-energy levels s,p and f
- B. it helps to predict the stable valency states of the elements
- C. it reflects trends in physical and chemical properties of the elements
- D. it helps to predict the relative ionicity of the bond between any two elements

**Answer: B**



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**289.** The first ionisation potential of  $Na$ ,  $Mg$ ,  $Al$  and  $Si$  are in the order

A.  $Na < Mg < Al < Si$

B.  $Na < Mg < Al > Si$

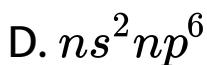
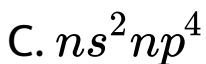
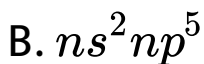
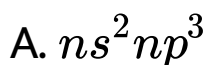
C.  $Na < Si < Al < Mg$

D.  $Na < Al < Mg < Si$

**Answer: D**



**290.** The outermost electronic configuration of the element with highest value of electron affinity

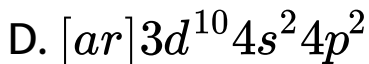
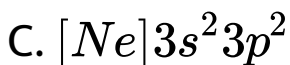
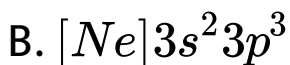
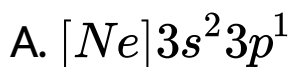


**Answer: B**





**291.** Amongst the following elements (whose electronic configuration is given below) the one having highest ionization energy is

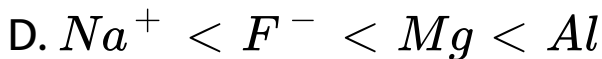
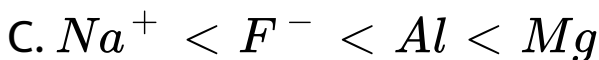
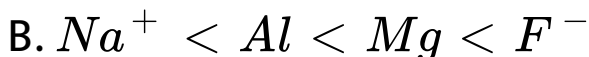
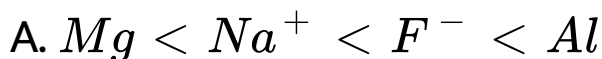


**Answer: B**



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**292.** Which one of the following is correct order of increase of size?



**Answer: B**



**293.** The correct order of electron affinity of the elements of oxygen family in the periodic table is

A.  $O > S > Se$

B.  $S > O > Se$

C.  $S > Se > O$

D.  $Se > O > S$

**Answer: C**







**294.** The statement that is not correct for periodic classification of element is A) The properties of elements are periodic function of their atomic numbers B) Non-metallic elements are less in number than metallic elements C) For transition elements, the 3d-orbitals are filled with electron after 3p-orbitals and before 4s-orbitals D) The first ionisation enthalpies of elements generally

increase with increase in atomic number as we go along a period

A. The properties of the elements are the periodic function of their atomic numbers

B. Non-metallic elements are lesser in number than the metallic elements

C. the first ionisation energies of elements along a period do not vary in a regular manner with increases in atomic number

D. For transition elements the d-subshells are filled with the electrons monotonically with increases in atomic number.

**Answer: D**



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**295.** Which of the following has largest size ?

A. Na

B.  $Na^{+}$

C.  $Na^{-}$

D. None of these

**Answer: C**



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**296.** The decreasing order of the second ionisation potential of K , Ca and Ba is  
  
(At. No : K = 19 , Ca = 20 , Ba = 56)

A. KgtCagtBa

B. CagtBagtK

C. BagtKgtCa

D. KgtBagtCa

**Answer: A**



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**297.** The incorrect statement Among the following is A)The first ionisation potential of Al is less than the first ionisation potential of

Mg. B) The first ionisation potential of Na is less than the first ionisation potential of Mg. C) The second ionisation potential of Mg greater than the second ionisation potential of Na D) The third ionisation potential of Mg greater than the third ionisation potential of Al

A. The first ionization potential of Al is less than the first ionization potential of Mg

B. The second ionization potential of Mg is greater than the second ionization

potential of Na

C. The first ionization potential of Na is less than the first ionization potential of Mg

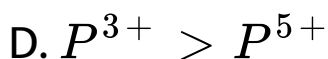
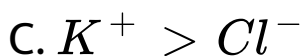
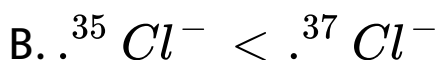
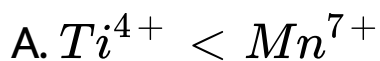
D. The third ionization potential of Mg is greater than the third ionization potential of Al.

**Answer: B**



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**298.** Ionic radii of :



**Answer: D**



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299. The correct order of radii is:

A.  $N < Be < B$

B.  $F^{-} < O^{2-} < N^{3-}$

C.  $Na < Li < K$

D.  $Fe^{3+} < Fe^{2+} < Fe^{4+}$

**Answer: B**



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**300.** The common features among the species

$CN^-$ ,  $CO$  and  $NO^+$

- A. Bond order three and isoelectronic
- B. bond order three and weak field ligands
- C. bond orders two and  $\pi$  — acceptors
- D. isoelectronic and weak field ligands

**Answer: A**



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**301.** The set representing the correct order of the first ionisation potential is

A.  $K > Na > Li$

B.  $Be < Mg > Ca$

C.  $B > C > N$

D.  $Ge > Si > C$

**Answer: B**



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**302.** Identify the least stable among the following



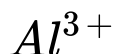
**Answer: B**



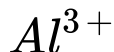
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303. The ions  $O^{2-}$ ,  $F^{-}$ ,  $Na^{+}$ ,  $Mg^{2+}$  and  $Al^{3+}$  are iso-electronic. Their ionic radii show are

A. a significant increase from  $O^{2-}$  to



B. a significant decrease from  $O^{2-}$  to



C. an increase from  $O^{2-}$  to  $F^{-}$  and then

decreases from  $Na^{+}$  to  $Al^{3+}$

D. a decrease from  $O^{2-}$  to  $F^{-}$  and then

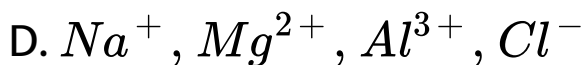
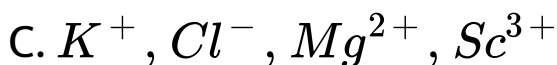
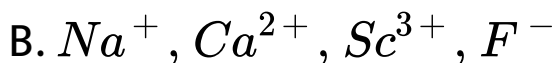
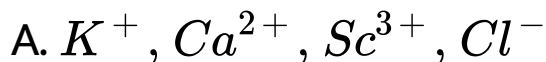
increases from  $Na^{+}$  to  $Al^{3+}$

**Answer: B**



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**304.** Which one of the following sets of ions represents the collection of isoelectronic species?

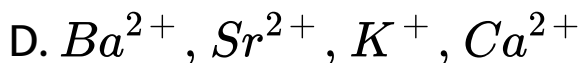
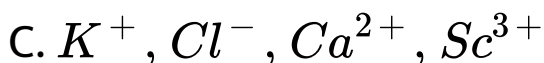
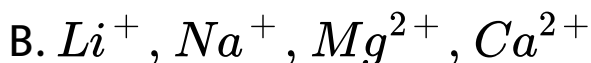
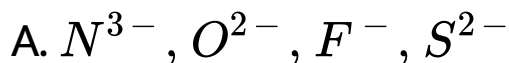


**Answer: A**



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**305.** Which of the following sets of ions represents a collection of isoelectronic species ?



**Answer: C**



**Watch Video Solution**

**306.** The increasing order of the first ionization enthalpy of the elements B, P, S and F (lowest first) is

A.  $B < P < S < F$

B.  $B < S < P < F$

C.  $F < S < P < B$

D.  $P < S < B < F$



**Answer: B**



**Watch Video Solution**

**307.** Following statements regarding the periodic trends of chemical reactivity of the alkali metals and the halogens are given. Which of these statements gives the correct picture: A) In alkali metals the reactivity increases but in the halogens it decreases with increase in atomic number down the group B) The reactivity decreases in the alkali

metals but increases in the halogens with increases in atomic number down the group.

C) In both the alkali metals and the halogens the chemical reactivity decreases with increases in atomic number down the group

D) Chemical reactivity increases with increases in atomic number down the group in both the alkali metals and halogens.

A. chemical reactivity increases with increases in atomic number down the

group in both the alkali metals and halogens

B. in alkali metals the reactivity increases but in the halogens it decreases with increases in atomic number down the group

C. the reactivity decreases in the alkali metals but increases in the halogens with increases in atomic number

D. in both the alkali metals and halogens, the chemical reactivity decreases with increases in atomic number down the group.

**Answer: B**



**Watch Video Solution**

**308.** Largest difference in radii is found in case of the pair

A. Li,Na

B. Na,K

C. K,Rb

D. Rb,Cs

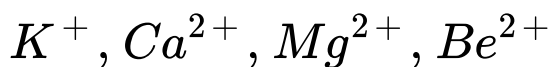
**Answer: B**



**Watch Video Solution**

**309.** The charge/size ratio of a cation determines its polarizing power. Which one of the following sequences represents the

increasing order of the polarizing power of the cationic species,



A.  $K^+ > Ca^{2+} > Mg^{2+} < Be^{2+}$

B.  $Be^{2+} < Ca^{2+} < Mg^{2+} < K^+$

C.  $Mg^{2+} < K^+ < Be^{2+} < Ca^{2+}$

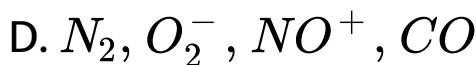
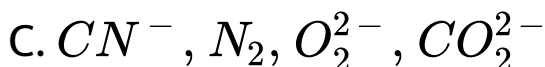
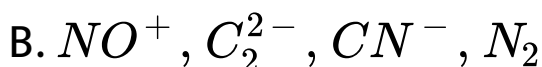
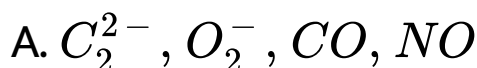
D.  $K^+ < Ca^{2+} < Mg^{2+} < Be^{2+}$

**Answer: D**



**Watch Video Solution**

**310.** Which one of the following constitutes a group of the isoelectronic species



**Answer: B**



**Watch Video Solution**

**311.** The correct of decreasing second ionisation enthalpy of  $Ti(22)$ ,  $V(23)$ ,  $Cr(24)$  and  $Mn(25)$  is

A.  $Mn > Cr > Ti > V$

B.  $Ti > V > Cr > Mn$

C.  $Cr > Mn > V > Ti$

D.  $V > Mn > Cr > Ti$

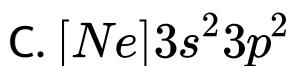
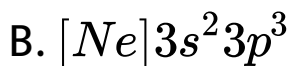
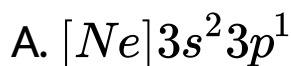
**Answer: C**



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**312.** Amongst the following elements (whose electronic configuration an given below) the one having highest ionization energy is



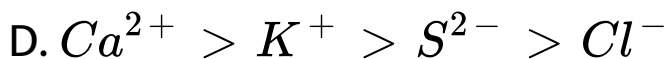
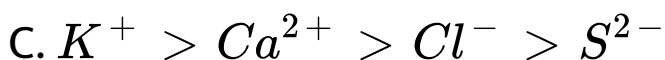
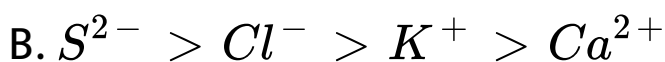
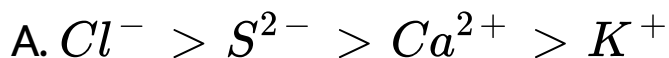
D.

**Answer: B**



**Watch Video Solution**

**313.** The correct order of decreasing ionic radii among the following isoelectronic species is



**Answer: B**



**Watch Video Solution**

**314.** Although every element is different from every other element, yet some elements have certain similarities. Based upon these similarities, the scientists after numerous attempts were are given. Based upon these multiple choice questions are ultimately sucessful in arranging the various elements into groups or chemical families in such a way that similar elements were put together. This arrangement of elements is called classification of elements and this led to the formulation of a periodic table. The periodic table is the most organising principle in

chemistry. If you know the properties of any element in a group, or of the columns, of the periodic table, you can make a good guess at the properties of every other element in the same group and even the elements in the neighbouring groups. The first break through in the classification of elements, was provided by Russian chemist Dmitri Iunovich Mendeleev. Taking the chemistry of the elements as his primary organising principle, he arranged the known elements by atomic mass and grouped them together according to their chemical reactivity. He also observed that there

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being filled up with the increase in atomic number in atoms of the elements. The nature of the block to which an element belongs depends upon the type of subshell which receives the last electron.

Long form of periodic table is based on the properties of the elements as a function of their

A. atomic mass

B. atomic size

C. atomic number

D. none of the above three.

**Answer: C**



**View Text Solution**

**315.** Although every element is different from every other element, yet some elements have certain similarities. Based upon these similarities, the scientists after numerous attempts were are given. Based upon these multiple choice questions are ultimately



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According to the periodic law of elements, the

variation in properties of elements is related to their

A. Atomic numbers

B. nuclear neutron-proton number ratios

C. atomic masses

D. nuclear masses.

**Answer: A**



**View Text Solution**

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In the periodic table, the element with atomic number 16 will be placed in the group

A. fourteen

B. sixteen

C. thirteen

D. fifteen

**Answer: B**



**View Text Solution**

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Which of the following sets of atomic numbers belong to that of alkali metals (group I)?

A. 12,30,4,62

B. 37,19,3,55

C. 9,17,35,53

D. 12,20,50,88

**Answer: B**



**View Text Solution**



**318.** Although every element is different from every other element, yet some elements have certain similarities. Based upon these similarities, the scientists after numerous attempts were are given. Based upon these multiple choice questions are ultimately sucessful in arranging the various elements into groups or chemical families in such a way that similar elements were put together. This arrangement of elements is called classification of elements and this led to the formulation of a periodic table. The periodic

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An element with electronic configuration  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^3 4s^2$  can be placed in the group

A. fifth

B. fifteen

C. second

D. third

**Answer: A**



**View Text Solution**

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Which of the following pairs of elements

belongs to the same period of the periodic table ?

A. Na,Ca

B. Mg,Sb

C. Ca,Cl

D. Cd,Zn

**Answer: D**



**View Text Solution**

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The element with atomic number 57 belongs to

A. s-block

B. p-block

C. d-block



D. f-block

**Answer: C**



**View Text Solution**

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What is the maximum number of electrons

which can be accommodated in an atom in which the highest principal quantum number is 4?

A. 10

B. 18

C. 36

D. 54

**Answer: C**



**View Text Solution**

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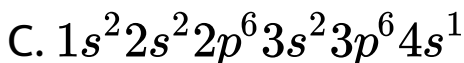
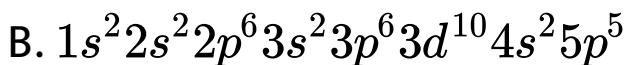
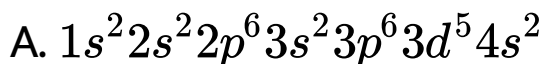


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The electronic configuration of the element which is just above the element with atomic number 43 in the same periodic group



$$\text{D. } 1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^1 4p^6$$

**Answer: A**



**View Text Solution**

**323.** There are certain properties of the elements which vary (increase or decrease) gradually in the same period or group with increase in atomic number. These properties of elements which show a regular gradation on moving from left to right in a period or

from top to bottom in a group are called periodic properties. The recurrence of similar properties of elements after certain regular intervals when they are arranged in the increasing order of their atomic numbers is called periodicity. Some of the properties such as ionic size, ionization enthalpies, electro-negativity, electron gain enthalpy, oxidizing/reducing power, acid/base character etc. are directly related to the electronic configuration of the elements. On the other hand, there are some properties such as etc. which are indirectly related to the

electronic configuration of the elements. The cause of repetition of similar electronic configuration of their atoms in valence shells after regular intervals melting points, density

Down the group, the atomic/ionic radii, metallic character and valencing character increase whereas ionisation enthalpy and electronegativity decrease. Across a right, period from left to atomic/ionic radii and metallic character decrease whereas ionization enthalpy, electronegativity, non-metallic character and oxidizing power increase. In general, electron gain enthalpy decreases i.e.,

becomes less negative bottom in a group. Across a period from left to right there is an overall increase in the electron gain enthalpies (i.e., it becomes more negative). However most gases have positive electron gain enthalpies which do not show any regular trend.

Which of the following does not reflect the periodicity of elements ?

A. bonding behaviour

B. electronegativity

C. ionisation potential

D. neutron-proton ratio.

**Answer: D**



**View Text Solution**

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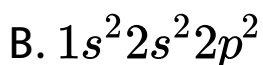
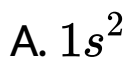
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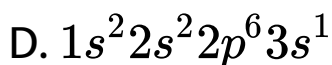
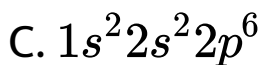
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Which of the following electronic configuration would exhibit the lowest first ionization energy?





**Answer: D**



**View Text Solution**

**325.** There are certain properties of the elements which vary (increase or decrease) gradually in the same period or group with increase in atomic number. These properties of elements which show a regular gradation

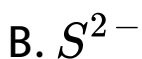
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Which of the following ions has the smallest radius?





**Answer: D**



**View Text Solution**

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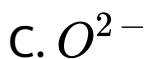
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Which of the following is isoelectronic with carbon atom?





**Answer: D**



**View Text Solution**

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Which of the following has least ionization potential ?

A. Li

B. Cs

C. Cl

D. I.

**Answer: B**



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The most electronegative element in the periodic table is

A. nitrogen

B. oxygen

C. chlorine

D. fluorine

**Answer: D**



**View Text Solution**

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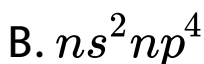
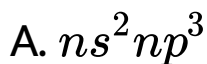
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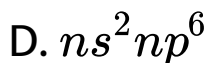
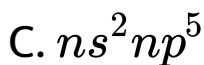
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The outermost electronic configuration of the most electronegative element is





**Answer: C**



**View Text Solution**

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Tick the correct order of second ionization enthalpy in the following

A. FgtOgtNgtC

B. OgtFgtNgtC

C. OgtNgtFgtC

D. CgtNgtOgtF

**Answer: B**



**View Text Solution**

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The incorrect statement among the following is

A. The first ionization potential of Al is less than the first ionization potential of Mg

B. The second ionization potential of Mg is greater than the second ionization potential of Na

C. The first ionization potential of Na is less than the first ionization potential of Mg

D. The third ionization potential of Mg is greater than the third ionization potential of Al.

**Answer: B**



**View Text Solution**



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gain enthalpies which do not show any regular trend.

Which of the following has the highest electron gain enthalpy?



**Answer: A**



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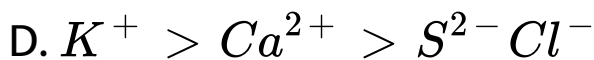
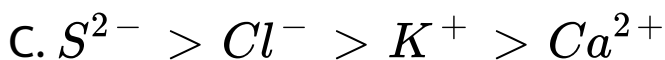
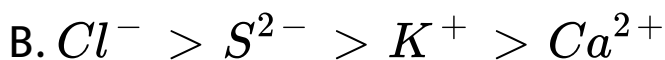
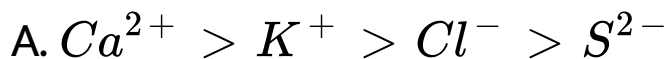
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gain enthalpies which do not show any regular trend.

Consider the isoelectronic series  $K^+$ ,  $S^{2-}$ ,  $Cl^-$  and  $Ca^{2+}$ , the radius of the ions decreases as



**Answer: C**





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The increasing order of the atomic radius for the elements Na, Rb, K and Mg is

A.  $\text{Na} < \text{K} < \text{Mg} < \text{Rb}$

B.  $\text{K} < \text{Na} < \text{Mg} < \text{Rb}$

C.  $\text{Na} < \text{Mg} < \text{K} < \text{Rb}$

D.  $\text{Mg} < \text{Na} < \text{K} < \text{Rb}$

**Answer: D**



**335.** Here each question contains statements given in two columns which have to be matched. Statements in column I are labelled as A,B,C and D where as statements in column II are labelled as p,q,r and s. The answers to these questions are to be bubbled  $4 \times 4$  matrix. If the correct matches are A-p, A-s, B-q, B-r, C-p, C-q and D-p, then corretly bubbled matrix should look like this following.

	<i>p</i>	<i>q</i>	<i>r</i>	<i>s</i>
A	●	○	○	●
B	○	●	●	○
C	●	●	○	○
D	●	○	○	○

Match the following

**Column I**

- A. Calcium
- B. Potassium
- C. Nitrogen
- D. Phosphorus

**Column II**

- p* alkali metal
- q* colour to flame
- r* reactive non-metal
- s* variable oxidation states



**View Text Solution**

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	<i>p</i>	<i>q</i>	<i>r</i>	<i>s</i>
A	●	○	○	●
B	○	●	●	○
C	●	●	○	○
D	●	○	○	○

Match the following

**Column I**

- A. Cl, Br, I
- B. B, C, O
- C.  $O^{2-}$ ,  $O^-$ , O
- D. Cl, F, P

**Column II**










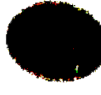






- p* Ionization potential increases
- q* Negative electron gain enthalpy decreases
- r* Atomic size decreases
- s* Belong to the same group.



**View Text Solution**



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	<i>p</i>	<i>q</i>	<i>r</i>	<i>s</i>
A				
B				
C				
D				

Match the following

Column I		Column II
A. $B_2$	<i>p</i>	Paramagnetic
B. $N_2$	<i>q</i>	Undergoes oxidation
C. $O_2^-$	<i>r</i>	Undergoes reduction
D. $O_2$	<i>s</i>	Bond order 2
	<i>t</i>	Mixing of <i>s</i> and <i>p</i> orbitals.



View Text Solution

**338.** Number of the following elements which are block elements

Pb, Al, B, K, S, Cd, Zn, Th, Sr



**View Text Solution**

**339.** On pauling scale, the electron negativity of fluorine.



**View Text Solution**

**340.** Number of series which constitute d-block of periodic table is .....



**View Text Solution**

**341.** Assertion: Although the ionisation energy of iodine ( $1008 \text{ kJ mol}^{-1}$ ) is much lower than that of hydrogen ( $1310 \text{ kJ mol}^{-1}$ ), yet, compounds of  $I^+$  cation are very less.

Reason: Iodine is electronegative element and

hence cannot form compounds in positive oxidation states.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



**View Text Solution**

**342.** Assertion: Oxides are more ionic than corresponding sulphides.

Reason: Oxygen has higher electron affinity than sulphur.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



**Watch Video Solution**

**343.** Assertion: Removal of s electrons is relatively difficult than removal of p-electron of same main shell.

Reason: s electrons are closer to the nucleus than p electrons of the same shell and hence are more strongly attracted by the nucleus.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: A**



**View Text Solution**



**344.** Assertion:  $EA_1$  of fluorine is less than that of chlorine.

Reason: Additional electrons are repelled more effectively by 3p electrons in Cl atoms than by 2p electrons in F atom than Cl.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



**View Text Solution**

**345.** Assertion: F-F bond in  $F_2$  is stronger than Cl-Cl bond in  $Cl_2$

Reason: F atom is small in size than.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: D**



**View Text Solution**

**346.** Assertion: Most of the compounds of p-block elements are covalent.

Reason: p-block elements, in general, have high electron affinities.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: B**



**View Text Solution**

**347.** Assertion: Cesium is the most electropositive element.

Reason: Cs has lowest electron affinity.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: B**



**View Text Solution**

**348.** Assertion: Ionisation energy of sulphur is less than that of phosphorus.

Reason: Half filled p-orbitals have extra stability.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: A**



**View Text Solution**

**349.** Assertion: The ionisation energy of N is more than that of O.

Reason: Electronic configuration of N is more stable due to half filled 2p orbitals.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: A**



**View Text Solution**



**350.** Assertion: Elements of p-block always form coloured ions in the aqueous solution.

Reason: p-block elements are also called transfermium elements

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. Both A and R are false

**Answer: D**



**View Text Solution**

**351.** Assertion: Boiling point decreases from lithium to Cs among elements of group 1.

Reason: The configuration of the elements of group 1 is  $ns^1$  when n varies from 1 to 7.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: B**



**View Text Solution**

**352.** Assertion: Metallic character increases from left to right among the elements of 2nd period.

Reason: Second period is called shortest period.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. Both A and R are false

**Answer: D**



**View Text Solution**

**353.** Assertion: Radius of the ion is always smaller than the parent atom.

Reason: Ion is formed by the loss or gain of electrons by the parent atom.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: D**



**View Text Solution**

**354.** Assertion: Isoelectronic ions have same number of electrons as well protons.

Reason: The number protons among the isoelectronic ions are different.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: D**



**View Text Solution**

**355.** Assertion: The first ionisation energy of Be is greater than boron.

Reason: 2p-orbitals have lower energy than 2s-orbital

A. Both A and B true and R is the correct explanation A



B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



**View Text Solution**

**356.** Assertion: Electron affinity of oxygen is less than that of fluorine but greater than that of nitrogen.

Reason: Ionisation potential decreases as

$$N > O > F.$$

A. Both A and B true and R is the correct

explanation A

B. Both A and R are true but R is not a

correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



**View Text Solution**

**357.** Assertion: Helium and beryllium have similar outer electronic configuration.

Reason: Both are chemically inert.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



**View Text Solution**

**358.** Assertion: F atom has lower electron affinity than Cl atom.

Reason: Additional electrons are reflected more effectively by 3p-electrons in Cl than 2p-electron in F atom.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



**View Text Solution**

**359.** Assertion: The first ionization energy of Be is greater than that of B.

Reason: 2p-orbital is lower in energy than 2s-orbital.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



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**360.** Assertion : First ionization energy is lower than oxygen.

Reason : Across a period effective charge decreases.

A. Both A and B true and R is the correct explanation A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. Both A and R are false

**Answer: D**



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**361.** Assertion :  $F$  is more electronegative than  $Cl$ .

Reason :  $F$  has high electron affinity than  $Cl$ .

A. Both A and B true and R is the correct explanation A



B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



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**362.** The compound  $CsAuCl_3$  is found to be diamagnetic. Gold (Au) in this compound is in

(there could be a covalent bond between two gold atoms)

- A. au oxidation state only
- B. Au(II) oxidation state only
- C. Au(I) and Au(III) oxidation states
- D. None of these



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**363.** Sum of first three ionisation energies of Al is 53.03 eV  $\alpha \rightarrow m^{-1}$  and the sum of first two ionisation energies of Na is 52.20 eV  $\alpha \rightarrow m^{-1}$  Out of Al(II) and Na(II)

A. Na(II) is more stable than Al(III)

B. Al(III) is more stable than Na(II)

C. Both are equally unstable

D. Both are equally stable



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**364.** The first three successive ionisation energies of an element X are 520, 7297 and 11810  $\text{kJ mol}^{-1}$  respectively. The element X belongs to

A. group 1

B. group 2

C. group 18

D. group 15



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**365.** The first three successive ionisation energies of an element Y are 900, 1757 and 14850  $\text{kJ mol}^{-1}$  respectively. The element Y belongs to

A. group 1

B. group 2

C. group 15

D. group 17



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**366.** The first three successive ionisation energies of an element Z are 1402, 2858 and 4576  $\text{kJ mol}^{-1}$  respectively. The element Z belongs to group

A. group 1

B. group 2

C. group 3

D. group 15



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**367.** The first three successive ionisation energies of an element M are 800, 2427 and 3638  $\text{kJ mol}^{-1}$  respectively. The element M belongs to group

A. group 2

B. group 3

C. group 18

D. group 17



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**368.** The one which is most basic out of the following







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**369.** Which one of these is most reactive?

A. Na

B.  $\text{K} > \text{Na} > \text{Mg} > \text{Rb}$

C. Pb

D. Mg



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**370.** The correct order of second ionisation potential of C, N, O and F is:

A.  $C > N > O > F$

B.  $C > N > F > O$

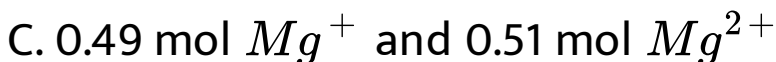
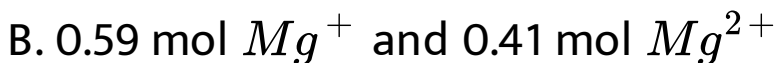
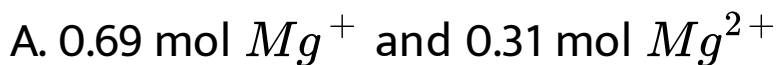
C.  $O > F > N > C$

D.  $F > O > N > C$



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**371.** 24 g of magnesium in the vapour state absorb 1200 kJ of energy. If  $IE_1$  and  $IE_2$  of magnesium are 750 and 1450 kJ  $\text{mol}^{-1}$  respectively, the final composition of mixture is



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**372.** An element has successive ionization enthalpies as 940 (first), 2080, 3090, 4140, 7030, 7870, 16000 and 19500  $\text{kJ mol}^{-1}$ . To which group of the periodic table does this element belong?

A. 14

B. 15

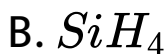
C. 16

D. 17



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**373.** The mass fraction of hydrogen in a compound of Group 14 element is 0.125. The hydride of this element has formula





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