1 CLASSIFICATION OF ELEMENTS & PERIODIC PROPERTIES

[JEE MAIN]

Q.1 The correct order of atomic radius is - **[AIEEE 2002]**

(1) Ce > Sm > Tb > Lu (2) Lu > Tb > Sm > Ce

(3) Tb > Lu > Sm > Ce (4) Sm > Tb > Lu > Ce

Q.2 Ce^{3+}, La^{3+}, Pm^{3+} and Yb^{3+} have ionic radii in the increasing order as – **[AIEEE 2002]**

(1) $La^{3+} < Ce^{3+} < Pm^{3+} < Yb^{3+}$ (2) $Yb^{3+} < Pm^{3+} < Ce^{3+} < La^{3+}$

(3) $La^{3+} = Ce^{3+} < Pm^{3+} < Yb^{3+}$ (4) $Yb^{3+} < Pm^{3+} < La^{3+} < Ce^{3+}$

Q.3 According to the Periodic Law of elements, the Variation in properties of elements is related to their ? **[AIEEE 2003]**

(1) Nuclear masses (2) Atomic numbers

(3) Nuclear neutron-proton number ratio (4) Atomic masses

Q.4 The reduction in atomic size with increase in atomic number is a characteristic of elements of - **[AIEEE 2003]**

(1) d-block (2) f-block (3) Radioactive series (4) High atomic masses

Q.5 Which one of the following groups represent a collection of isoelectronic species ?
(At. no. Cs = 55, Br = 35) **[AIEEE 2003]**

(1) N^{3-}, F^-, Na^+ (2) Be, Al^{3+}, Cl^- (3) Ca^{2+}, Cs^+, Br (4) Na^+, Ca^{2+}, Mg^{2+}

Q.6 The atomic numbers of vanadium (V). Chromium (Cr), manganese (Mn) and iron (Fe) respectively 23, 24, 25 and 26. Which one of these may be expected to have the higher second ionization enthalpy ? **[AIEEE 2003]**

(1) Cr (2) Mn (3) Fe (4) V

Q.7 Which one of the following sets of ions represents the collection of isoelectronic species ? **[AIEEE 2004]**

(1) K^+, Cl^-, Mg^{2+}, Sc^{3+} (2) Na^+, Ca^{2+}, Sc^{3+}, F^-

(3) K^+, Ca^{2+}, Sc^{3+}, Cl^- (4) Na^+, Mg^{2+}, Al^{3+}, Cl^-

Q.8 Which one of the following ions has the highest value of ionic radius ? **[AIEEE 2004]**

(1) O^{2-} (2) B^{3+} (3) Li^+ (4) F^-

Q.9 Among Al_2O_3, SiO_2, P_2O_3 and SO_2 the correct order of acidic strength is : **[AIEEE 2004]**

(1) $Al_2O_3 < SiO_2 < SO_2 < P_2O_3$ (2) $SiO_2 < SO_2 < Al_2O_3 < P_2O_3$

(3) $SO_2 < P_2O_3 < SiO_2 < Al_2O_3$ (4) $Al_2O_3 < SiO_2 < P_2O_3 < SO_2$

Q.10 The formation of the oxide ion $O^{2-}_{(g)}$ requires first an exothermic and then an endothermic step as shown below. **[AIEEE 2004]**

$O_{(g)} + e^- = O^-_{(g)}$ $\Delta H° = -142$ kJ mol^{-1}

$O^-_{(g)} + e^- = O^{2-}_{(g)}$ $\Delta H° = 844$ kJ mol^{-1}

This is because of :

(1) O^- ion will tend to resist the addition of another electron

(2) Oxygen has high electron affinity

(3) Oxygen is more electronegative

(4) O^- ion has comparatively larger size than oxygen atom

Q.11 In which of the following arrangements the order is NOT according to the property indicated against it ?

(1) $Al^{3+} < Mg^{2+} < Na < F^-$ – increasing ionic size **[AIEEE 2005]**

(2) B < C < N < O – increasing first ionization enthalpy

(3) I < Br < F < Cl – increasing electron gain enthalpy (with negative sign)

(4) Li < Na < K < Rb – increasing metallic radius

Q.12 Which of the following oxides is amphoteric in character ? **[AIEEE 2005]**

(1) SnO_2 (2) SiO_2 (3) CO_2 (4) CaO

Q.13 The lanthanide contraction is responsible for the fact that **[AIEEE 2005]**

(1) Zr and Y have about the same radius (2) Zr and Nb have similar oxidation state

(3) Zr and Hf have about the same radius (4) Zr and Zn have the same oxidation state

Q.14 The increasing order of the first ionization enthalpies of the elements B, P, S and F (lowest first) is – **[AIEEE 2006]**

(1) F < S < P < B (2) P < S < B < F (3) B < P < S < F (4) B < S < P < F

Q.15 Which one of the following sets of ions represents a collection of isoelectronic species ? **[AIEEE 2006]**

(1) N^{3-}, O^{2-}, F^-, S^{2-} (2) Li^+, Na^+, Mg^{2+}, Ca^{2+}

(3) K^+, Cl^-, Ca^{2+}, Sc^{3+} (4) Ba^{2+}, Sr^{2+}, K^+, Ca^{2+}

Q.16 In which of the following arrangements, the sequence is not strictly according to the property written against it ? **[AIEEE 2009]**

(1) $H_2O < H_2S < H_2Se < H_2Te$: Increasing acidic strength

(2) HF < HCl < HBr < HI : Increasing acidic strength

(3) $NH_3 > PH_3 < AsH_3 < SbH_3$: Increasing basic strength

(4) B < C < O < N : increasing first ionization enthalpy

Q.17 The set representing the correct order of ionic radius is – **[AIEEE 2009]**

(1) $Li^+ > Be^{2+} > Na^+ > Mg^{2+}$ (2) $Na^+ > Li^+ > Mg^{2+} > Be^{2+}$

(3) $Li^{2+} > Na^+ > Mg^{2+} > Be^{2+}$ (4) $Mg^{2+} > Be^{2+} > Li^+ > Na^+$

Q.18 The correct sequence which shows decreasing order of the ionic radii of the elements is **[AIEEE 2010]**

(1) $Al^{3+} > Mg^{2+} > Na^+ > F^- > O^{2-}$ (2) $Na^+ > Mg^{2+} > Al^{3+} > O^2 > F^-$

(3) $Na^+ > F^- > Mg^{2+} > O^{2-} > Al^{3+}$ (4) $O^{2-} > F^- > Na^+ > Mg^{2+} > Al^{3+}$

Q.19 Which one of the following ordered presents the correct sequence of the increasing basic nature of the given oxides ? **[AIEEE 2011]**

(1) $Al_2O_3 < MgO < Na_2O < K_2O$ (2) $MgO < K_2O < Al_2O_3 < Na_2O$

(3) $Na_2O < K_2O < MgO < Al_2O_3$ (4) $K_2O < Na_2O < Al_2O_3 < MgO$

Q.20 The increasing order of the ionic radii of the given isoelectronic species is **[AIEEE 2012]**

(1) $Ca^{2+}, K^+, Cl^-, S^{2-}$ (2) $K^+, S^{2-}, Ca^{2+}, Cl^-$

(3) $Cl^-, Ca^{2+}, K^+, S^{2-}$ (4) $S^{2-}, Cl^-, Ca^{2+}, K^+$

Q.21 The first ionisation potential of Na is 5.1 eV. The value of electron gain enthalpy of Na^+ will be:

(1) –5.1 eV (2) –10.2 eV (3) +2.55 eV (4) –2.55 eV

[JEE (Main-Offline) 2013]

Q.22 Which of the following represents the correct order of increasing first ionization enthalpy for Ca, Ba, S, Se and Ar? **[JEE (Main-Offline) 2013]**

(1) S < Se < Ca < Ba < Ar (2) Ba < Ca < Se < S < Ar

(3) Ca < Ba < S < Se < Ar (4) Ca < S < Ba < Se < Ar

Q.23 Electron gain enthalpy with negative sign of fluorine is less than that of chlorine due to :

(1) Bigger size of 2p orbital of fluorine (2) High ionization enthalpy of fluorine

(3) Smaller size of chlorine atom (4) Smaller size of fluorine atom

[JEE (Main-Online) 2013]

Q.24 Oxidation state of sulphur in anions SO_3^{2-}, $S_2O_4^{2-}$ and $S_2O_6^{2-}$ increases in the orders :

(1) $S_2O_6^{2-} < S_2O_4^{2-} < SO_3^{2-}$ (2) $SO_3^{2-} < S_2O_4^{2-} < S_2O_6^{2-}$

(3) $S_2O_4^{2-} < SO_3^{2-} < S_2O_6^{2-}$ (4) $S_2O_4^{2-} < S_2O_6^{2-} < SO_3^{2-}$

[JEE (Main-Online) 2013]

Q.25 The order of increasing sizes of atomic radii among the elements O, S, Se and As is :

(1) Se < S < As < O (2) As < S < O < Se

(3) O < S < Se < As (4) O < S < As < Se

[JEE (Main-Online) 2013]

Q.26 Given

Reaction	Energy Change (in kJ)
$Li(s) \rightarrow Li(g)$	161
$Li(g) \rightarrow Li^+(g)$	520
$\frac{1}{2}F_2(g) \rightarrow F(g)$	77
$F(g) + e^- \rightarrow F^-(g)$	(Electron gain enthalpy)
$Li^+(g) + F^-(g) \rightarrow LiF(s)$	–1047
$Li(s) + \frac{1}{2}F_2(g) \rightarrow LiF(s)$	–617

Based on data provided, the value of electron gain enthalpy of fluorine would be :

(1) –300 kJ mol–1 (2) –228 kJ mol^{-1} (3) – 328 kJ mol^{-1} (4) –350 kJ mol^{-1}

[JEE (Main-Online) 2013]

Q.27 Which is the correct order of second ionization potential of C, N, O and F in the following ?

(1) C > N > O > F (2) F > O > N > C (3) O > N > F > C (4) O > F > N > C

[JEE (Main-Online) 2013]

Q.28 Which of the following arrangements represents the increasing order (smallest to largest) of ionic radii of the given species O^{2-}, S^{2-}, N^{3-}, P^{3-} ?

(1) $N^{3-} < O^{2-} < P^{3-} < S^{2-}$ (2) $O^{2-} < P^{3-} < N^{3-} < S^{2-}$

(3) $N^{3-} < S^{2-} < O^{2-} < P^{3-}$ (4) $O^{2-} < N^{3-} < S^{2-} < P^{3-}$

[JEE (Main-Online) 2014]

Q.29 Similarlity in chemical properties of the atoms of elements in a group of the Periodic table is most closely related to :

(1) number of varence electrons (2) number of principal energy levels

(3) atomic masses (4) atomic numbers

[JEE (Main-Online) 2014]

Q.30 Which one of the following has largest ionic radius ?

(1) Li^+ (2) B^{3+} (3) O^{2-} (4) F^-

[JEE (Main-Online) 2014]

Q.31 The ionic radii **(in Å)** of N^{3-}, O^{2-} and F^- are respectively ?

(1) 1.71, 1.40 and 1.36 (2) 1.71, 1.36 and 1.40

(3) 1.36, 1.40 and 1.71 (4) 1.36, 1.71 and 1.40

[JEE (Main-Offline) 2015]

Q.32 If the principal quantum number n = 6, the correct sequence of filling of electrons will be :

(1) ns → (n – 2) *f* → (n – 1)d → np (2) ns → (n – 1) d → (n – 2) *f* → np

(3) ns → (n – 2) *f* → np → (n – 1)d (4) ns → np → (n – 1) d → (n – 2) *f*

[JEE (Main-Online) 2015]

Q.33 In the long form of the periodic table, the valence shell electronic configuration of $5s^25p^4$ corresponds to the element present in :

(1) Group 16 and period 5 (2) Group 16 and period 6

(2) Group 17 and period 6 (4) Group 17 and period 5

[JEE (Main-Online) 2015]

Q.34 Which of the following atoms has the highest first ionization energy ? **[JEE (Main-Offline) 2016]**

(1) Sc (2) Rb (3) Na (4) K

Q.35 The following statements concern elements in the periodic table. Which of the following is true ?

(1) All the elements in Group 17 are gases.

(2) The Group 13 elements are all metals.

(3) Elements of Group 16 have lower ionization enthalpy values compared to those of Group 15 in the corresponding periods.

(4) For Group 15 elements, the stability of +5 oxidation state increases down the group.

[JEE (Main-Online) 2016]

Q.36 The group having isoelectronic species is : **[JEE (Main-Offline) 2017]**

(1) O^-, F^-, Na, Mg^+ (2) O^{2-}, F^-, Na, Mg^{2+}

(3) O^-, F^-, Na^+, Mg^{2+} (4) O^{2-}, F^-, Na^+, Mg^{2+}

Q.37 Consider the following ionization enthalpies of two elements 'A' and 'B'.

Element	Ionisation enthalpy (kJ/mol)		
	1^{st}	2^{nd}	3^{rd}
A	899	1757	14847
B	737	1450	7731

Which of the following statements is correct ?

(1) Both 'A' and 'B' belong to group-1 where 'B' comes below 'A'.

(2) Both 'A' and 'B' belong to group-1 where 'A' comes below 'B'.

(3) Both 'A' and 'B' belong to group-2 where 'B' comes below 'A'.

(4) Both 'A' and 'B' belong to group-2 where 'A' comes below 'B'.

[JEE (Main-Online) 2017]

Q.38 The electronic configuration with the highest ionization enthalpy is :

(1) [Ne] $3s^2\ 3p^1$ (2) [Ne] $3s^2\ 3p^2$ (3) [Ne] $3s^2\ 3p^3$ (4) [Ar] $3d^{10}\ 4s^2\ 4p^3$

[JEE (Main-Online) 2017]

Q.39 The **correct** order of electron affinity is :

(1) Cl > F > O (2) O > F > Cl (3) F > Cl > O (4) F > O > Cl

[JEE (Main-Online) 2018]

Q.40 For Na^+, Mg^{2+}, F^- and O^{2-} ; the **correct** order of increasing ionic radii is :

(1) $Mg^{2+} < O^{2-} < Na^+ < F^-$ (2) $Mg^{2+} < Na^+ < F^- < O^{2-}$

(3) $Na^+ < Mg^{2+} < F^- < O^{2-}$ (4) $O^{2-} < F^- < Na^+ < Mg^{2+}$

[JEE (Main-Online) 2018]

Q.41 In general, the properties that decrease and increase down a group in the periodic table, respectively are

(1) Electron gain enthalpy and electronegativity

(2) Electronegativity and electron gain enthalpy

(3) Atomic radius and electronegativity

(4) Electronegativity and atomic radius

[JEE (Main-Online) 2019]

Q.42 When the first electron gain enthalpy ($\Delta_{eg}H$) of oxygen is – 141 kJ/mol, its second electron gain enthalpy is :

(1) a more negative value than the first
(2) negative, but less negative than the first
(3) a positive value
(4) almost the same as that of the first.

[JEE (Main-Online) 2019]

Q.43 The electronegativity of aluminium is similar to :

(1) Beryllium (2) Boron (3) Lithium (4) Carbon

[JEE (Main-Online) 2019]

Q.44 The 71st electron of an element X with an atomic number of 71 enters into the orbital :

(1) 6s (2) 6p (3) 5d (4) 4f

[JEE (Main-Online) 2019]

Q.45 The amphoteric hydroxide is

(1) $Be(OH)_2$ (2) $Ca(OH)_2$ (3) $Mg(OH)_2$ (4) $Sr(OH)_2$

[JEE (Main-Online) 2019]

Q.46 The correct order of the atomic radii of C, Cs, Al and S is

(1) C < S < Al < Cs (2) S < C < Cs < Al (3) S < C < Al < Cs (4) C < S < Cs < Al

[JEE (Main-Online) 2019]

Q.47 The correct option with respect to the Pauling electronegativity values of the elements is:

(1) Te > Se (2) Ga < Ge (3) Si < Al (4) P > S

[JEE (Main-Online) 2019]

Q.48 The relative stability of +1 oxidation state of group 13 elements follows the order:

(1) Al < Ga < Tl < ln (2) Tl < ln < Ga < Al (3) Ga < Al < ln < Tl (4) Al < Ga < ln < Tl

[JEE (Main-Online) 2019]

Q.49 The element with Z = 120 (not yet discovered) will be an / a :

(1) Inner-transition metal
(2) Transition metal
(3) Alkaline earth metal
(4) Alkali metal

[JEE (Main-Online) 2019]

Q.50 The correct order of atomic radii is:

(1) Ho > N > Eu > Ce
(2) Ce > Eu > Ho > N
(3) Eu > Ce > Ho > N
(4) N > Ce > Eu > Ho

[JEE (Main-Online) 2019]

Q.51 In general, the property (magnitudes only) that shows an opposite trend in comparison to other properties across a period is

(1) Electronegativity
(2) Electron gain enthalpy
(3) Ionization enthalpy
(4) Atomic radius

[JEE (Main-Online) 2020]

Q.52 Three elements X, Y and Z are in the 3rd period of the periodic table. The oxides of X, Y and Z, respectively, are basic, amphoteric and acidic. The correct order of the atomic numbers of X, Y and Z is:

(1) $Z < Y < X$ (2) $X < Z < Y$ (3) $X < Y < Z$ (4) $Y < X < Z$

[JEE (Main-Online) 2020]

Q.53 The atomic number of the element unnilennium is :

(1) 119 (2) 108 (3) 102 (4) 109

[JEE (Main-Online) 2020]

Q.54 The five successive ionization enthalpies of an elements are 800, 2427, 3658, 25024 and 32824 kJ mol^{-1}. The number of valence electrons in the element is :

(1) 2 (2) 3 (3) 4 (4) 5

[JEE (Main-Online) 2020]

Q.55 The elements with atomic numbers 101 and 104 belong to, respectively:

(1) Group 11 and Group 4 (2) Actinoids and Group 4

(3) Actinoids and Group 6 (4) Group 6 and Actinoids

[JEE (Main-Online) 2020]

Q.56 The ionic radii of O^{2-}, F^-, Na^+ and Mg^{2+} are in the order :

(1) $F^- > O^{2-} > Na^+ > Mg^{2+}$ (2) $Mg^{2+} > Na^+ > F^- > O^{2-}$

(3) $O^{2-} > F^- > Mg^{2+} > Na^+$ (4) $O^{2-} > F^- > Na^+ > Mg^{2+}$

[JEE (Main-Online) 2020]

Q.57 The process that is NOT endothermic in nature is

(1) $Ar_{(g)} + e^- \rightarrow Ar^-_{(g)}$ (2) $H_{(g)} + e^- \rightarrow Hr^-_{(g)}$

(3) $Na_{(g)} \rightarrow Na^+_{(g)} + e^-$ (4) $O^-_{(g)} + e^- \rightarrow O^{2-}_{(g)}$

[JEE (Main-Online) 2020]

Q.58 In the sixth period, the orbitals that are filled are

(1) 6s, 5f, 6d, 6p (2) 6s, 6p, 6d, 6f (3) 6s, 5d, 5f, 6p (4) 6s, 4f, 5d, 6p

[JEE (Main-Online) 2020]

Q.59 The correct order of the ionic radii of
O^{2-}, N^{3-}, F^-, Mg^{2+}, Na^+ and Al^{3+} is :

(1) $Al^{3+} < Na^+ < Mg^{2+} < O^{2-} < F^- < N^{3-}$ (2) $N^{3-} < O^{2-} < F^- < Na^+ < Mg^{2+} < Al^{3+}$

(3) $Al^{3+} < Mg^{2+} < Na^+ < F^- < O^{2-} < N^{3-}$ (4) $N^{3-} < F^- < O^{2-} < Mg^{2+} < Na^+ < Al^{3+}$

[JEE (Main-Online) 2020]

Q.60 The atomic number of Unnilunium is_____. **[JEE (Main-Online) 2020]**

Q.61 The electron gain enthalpy (in kJ/mol) of fluorine, chlorine, bromine and iodine, respectively, are

(1) –296, –325, –333 and –349 (2) –333, –349, –325 and –296

(3) –349, –333, –325 and –296 (4) –333, –325, –349 and –296

[JEE (Main-Online) 2020]

Q.62 Within each pair of element F & Cl, S & Se, and Li & Na, respectively, the elements that release more energy upon an electron gain are

(1) Cl, Se and Na (2) Cl, S and Li (3) F, S and Li (4) F, Se and Na

[JEE (Main-Online) 2020]

Q.63 The increasing order of the atomic radii of the following elements is

(a) C (b) O (c) F

(d) Cl (e) Br

(1) (a) < (b) < (c) < (d) < (e) (2) (c) < (b) < (a) < (d) < (e)

(3) (d) < (c) < (b) < (a) < (e) (4) (b) < (c) < (d) < (a) < (e)

[JEE (Main-Online) 2020]

Q.64 B has a smaller first ionization enthalpy than Be. Consider the following statements:

(I) it is easier to remove 2p electron than 2s electron.

(II) 2p electron of B is more shielded from the nucleus by the inner core of electrons than the 2s electrons of Be.

(III) 2s electron has more penetration power than 2p electron

(IV) atomic radius of B is more than Be

(atomic number B = 5, Be = 4)

The correct statements are

(1) (I), (II) and (IV) (2) (II), (III) and (IV) (3) (I), (II) and (III) (4) (I), (III) and (IV)

[JEE (Main-Online) 2020]

Q.65 The acidic basic and amphoteric oxides, respectively, are

(1) Cl_2O, CaO, P_4O_{10} (2) Na_2O, SO_3, Al_2O_3

(3) N_2O_3, Li_2O, Al_2O_3 (4) MgO, Cl_2O, Al_2O_3

[JEE (Main-Online) 2020]

Q.66 The oxidation states of transition metal atoms in $K_2Cr_2O_7$, $KMnO_4$ and K_2FeO_4, respectively, are x, y and z. The sum of x, y and z is____.

[JEE (Main-Online) 2020]

[JEE ADVANCED]

Q.1 Moving from right to left in a periodic table, the atomic size is: **[JEE 1995]**
(A) increased (B) decreased (C) remains constant (D) none of these

Q.2 The increasing order of electronegativity in the following elements: **[JEE 1995]**
(A) C, N, Si, P (B) N, Si, C, P (C) Si, P, C, N (D) P, Si, N, C

Q.3 One element has atomic weight 39. Its electronic configuration is $1s^2$, $2s^2$ $2p^6$, $3s^2$ $3p^6$ $4s^1$. The true statement for that element is:
(A) Highest value of IE (B) Transition element
(C) Isotone with $_{18}Ar^{38}$ (D) None **[JEE 1995]**

Q.4 The number of paired electrons in oxygen atom is: **[JEE 1995]**
(A) 6 (B) 16 (C) 8 (D) 32

Q.5 The decreasing size of K^+, Ca^{2+}, Cl^- & S^{2-} follows the order: **[REE 1995]**
(A) $K^+ > Ca^{+2} > S^{-2} > Cl^-$ (B) $K^+ > Ca^{+2} > Cl^- > S^{-2}$
(C) $Ca^{+2} > K^+ > Cl^- > S^{-2}$ (D) $S^{-2} > Cl^- > K^+ > Ca^{+2}$

Q.6 Which of the following oxide is neutral? **[JEE 1996]**
(A) CO (B) SnO_2 (C) ZnO (D) SiO_2

Q.7 Which of the following has the maximum number of unpaired electrons **[JEE 1996]**
(A) Mg^{2+} (B) Ti^{3+} (C) V^{3+} (D) Fe^{2+}

Q.8 The following acids have been arranged in the order of decreasing acid strength. Identify the correct order **[JEE 1996]**
ClOH(I) BrOH(II) IOH(III)
(A) I > II > III (B) II > I > III (C) III > II > I (D) I > III > II

Q.9 The incorrect statement among the following is: **[JEE 1997]**
(A) the first ionisation potential of Al is less than the first ionisation potential of Mg
(B) the second ionisation potential of Mg is greater than the second ionisation potential of Na
(C) the first ionisation potential of Na is less than the first ionisation potential of Mg
(D) the third ionisation potential of Mg is greater than the third ionisation potential of Al

Q.10 Which of the following are amphoteric? **[REE 1997]**
(A) $Be(OH)_2$ (B) $Sr(OH)_2$ (C) $Ca(OH)_2$ (D) $Al(OH)_3$

Q.11 Li^+, Mg^{2+}, K^+, Al^{3+} (Arrange in increasing order of radii) **[JEE 1997]**

Q.12 Which one of the following statement (s) is (are) correct? **[JEE 1998]**

(A) The electronic configuration of Cr is [Ar] $3d^5\ 4s^1$.(Atomic No. of Cr = 24)

(B) The magnetic quantum number may have a negative value

(C) In silver atom, 23 electrons have a spin of one type and 24 of the opposite type. (Atomic No. of Ag = 47)

(D) The oxidation state of nitrogen in HN_3 is –3.

Q.13 **Statement-1**: F atom has a less negative electron gain enthalpy than Cl atom. **[JEE 2000]**

Statement-2: Additional electron is repelled more efficiently by 3p electron in Cl atom than by 2p electron in F atom.

(A) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.

(B) Statement-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.

(C) Statement-1 is true, statement-2 is false.

(D) Statement-1 is false, statement-2 is true.

Q.14 **Statement-1**: $Al(OH)_3$ is amphoteric in nature. **[JEE 2000]**

Statement-2: Al –O and O – H bonds can be broken with equal ease in $Al(OH)_3$.

(A) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.

(B) Statement-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.

(C) Statement-1 is true, statement-2 is false.

(D) Statement-1 is false, statement-2 is true.

Q.15 The correct order of radii is: **[JEE 2000]**

(A) N < Be < B (B) $F^- < O^{2-} < N^{3-}$ (C) Na < Li < K (D) $Fe^{3+} < Fe^{2+} < Fe^{4+}$

Q.16 The correct order of acidic strength is: **[JEE 2000]**

(A) $Cl_2O_7 > SO_3 > P_4O_{10}$ (B) $CO_2 > N_2O_5 > SO_3$

(C) $Na_2O > MgO > Al_2O_3$ (D) $K_2O > CaO > MgO$

Q.17 The IE_1 of Be is greater than that of B. [**T/F**] **[JEE 2001]**

Q.18 The set representing correct order of IP_1 is **[JEE 2001]**

(A) K > Na > Li (B) Be > Mg > Ca (C) B > C > N (D) Fe > Si > C

Q.19 Identify the least stable ion amongst the following: **[JEE 2002]**

(A) Li^- (B) Be^- (C) B^- (D) C^-

Q.20 Identify the correct order of acidic strengths of CO_2, CuO, CaO, H_2O: **[JEE 2002]**

(A) $CaO < CuO < H_2O < CO_2$ (B) $H_2O < CuO < CaO < CO_2$

(C) $CaO < H_2O < CuO < CO_2$ (D) $H_2O < CO_2 < CaO < CuO$

Q.21 Among the following, the number of elements showing only one non-zero oxidation state is

O, Cl, F, N, P, Sn, Tl, Na, Ti **[JEE 2010]**

Q.22 The increasing order of atomic radii of the following Group 13 elements is **[JEE (Advanced) 2016]**

(A) Al < Ga < In < Tl (B) Ga < Al < In < Tl

(C) Al < In < Ga < Tl (D) Al < Ga < Tl < In

Q.23 The option(s) with only amphoteric oxide is(are) **[JEE (Advanced) 2017]**

(A) Cr_2O_3, BeO, SnO, SnO_2 (B) Cr_2O_3, CrO, SnO, PbO

(C) ZnO, Al_2O_3, PbO, PbO_2 (D) NO, B_2O_3, PbO, SnO_2

ANSWER KEY

CLASSIFICATION OF ELEMENTS & PERIODIC PROPERTIES

[JEE MAIN]

Q.1	1	Q.2	2	Q.3	2	Q.4	2	Q.5	1
Q.6	1	Q.7	3	Q.8	1	Q.9	4	Q.10	1
Q.11	2	Q.12	1	Q.13	3	Q.14	4	Q.15	3
Q.16	3	Q.17	2	Q.18	4	Q.19	1	Q.20	1
Q.21	1	Q.22	2	Q.23	4	Q.24	3	Q.25	3
Q.26	3	Q.27	4	Q.28	4	Q.29	1	Q.30	3
Q.31	1	Q.32	1	Q.33	1	Q.34	1	Q.35	3
Q.36	4	Q.37	3	Q.38	3	Q.39	1	Q.40	2
Q.41	4	Q.42	3	Q.43	1	Q.44	3	Q.45	1
Q.46	1	Q.47	2	Q.48	4	Q.49	3	Q.50	2
Q.51	4	Q.52	3	Q.53	4	Q.54	2	Q.55	2
Q.56	4	Q.57	2	Q.58	4	Q.59	3	Q.60	101.00
Q.61	2	Q.62	2	Q.63	2	Q.64	3	Q.65	3
Q.66	19.00								

[JEE ADVANCED]

Q.1	A	Q.2	C	Q.3	C	Q.4	A	Q.5	D
Q.6	A	Q.7	D	Q.8	A	Q.9	B	Q.10	A
Q.11	$Al^{+3} < Mg^{2+} < Li^{+} < K^{+}$			Q.12	ABC	Q.13	C	Q.14	C
Q.15	B	Q.16	A	Q.17	True	Q.18	B	Q.19	B
Q.20	A	Q.21	2	Q.22	B	Q.23	AC		