Q1 JEE Main 2020 - 2 September (Morning)

In general the property (magnitudes only) that show an opposite trend in comparison to other properties across a period is

(A) Electron gain enthalpy
(B) Electronegativity
(C) Ionization enthalpy
(D) Atomic radius

Q2 JEE Main 2020 - 2 September (Evening)

Three elements X, Y and Z are in the $3^{\text{rd period}}$ 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 $\mathrm{X}\, Y$ and Z is

(A) $x < z < Y$
(B) $Y < x < z$
(C) $z < Y < x$
(D) $x < Y < z$

Q3 JEE Main 2020 - 3 September (Morning)

The atomic number of the element unnilennium is

(A) 109
(B) 119
(C) 102
(D) 108

Q4 JEE Main 2020 - 3 September (Evening)

Among the statements $(1 - IV)$, the correct ones are

(I) Be has smaller atomic radius compared to Mg.
(II) Be has higher ionization enthalpy than Al.
(III) Charge/radius ratio of Be is greater than that of Al.
(IV)Both Be and Al form mainly covalent compounds.

(A) (I), (III) and (IV)
(B) (I), (II) and (IV)
(C) (1), (II) and (III)
(D) (II), (III) and (IV)

Q5 JEE Main 2020 - 3 September (Evening)

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

(A) 3
(B) 4
(C) 2
(D) 5

Q6 JEE Main 2020 - 4 September (Morning)

The elements with atomic numbers 101 and 104 belong to, respectively,

(A) Group 6 and Actinoids
(B) Actinoids and Group 4
(C) Group 11 and Group 4
(D) Actinoids and Group 6

Q7 JEE Main 2020 - 4 September (Morning)

The ionic radii of $\mathrm{O}^{2-}, \mathrm{F}^{-}, \mathrm{Na}^{+}$ and Mg^{2+} are in the order

(A) $\mathrm{F}^{-} > \mathrm{O}^{2-} > \mathrm{Na}^{+} > \mathrm{Mg}^{2+}$
(B) $\mathrm{Mg}^{2+} > \mathrm{Na}^{+} > \mathrm{F}^{-} > \mathrm{O}^{2-}$
(C) $\mathrm{O}^{2-} > \mathrm{F}^{-} > \mathrm{Mg}^{2+} > \mathrm{Na}^{+}$
(D) $\mathrm{O}^{2-} > \mathrm{F}^{-} > \mathrm{Na}^{+} > \mathrm{Mg}^{2+}$

Q8 JEE Main 2020 - 4 September (Evening)

The process that is NOT endothermic in nature is

(A) $\mathrm{Ar}_{(\mathrm{g})} + \mathrm{e}^{-} \longrightarrow \mathrm{Ar}^{-}_{(\mathrm{g})}$

(B) $H_{(g)} + e^- \longrightarrow H^-_{(g)}$
(C) $Na_{(g)} \longrightarrow Na^+_{(g)} + e^-$
(D) $O^-_{(g)} + e^- \longrightarrow O^{2-}_{(g)}$

Q9 JEE Main 2020 - 5 September (Morning)

The difference between radii of 3^{rd} and 4^{th} orbits of Li^{2+} is ΔR_1. The difference between the radii of 3^{rd} and 4^{th} orbits of He^+ is ΔR_2. Ratio $\Delta R_1 : \Delta R_2$ is

(A) 03:02
(B) 08:03
(C) 02:03
(D) 03:08

Q10 JEE Main 2020 - 5 September (Evening)

The correct order of the ionic radii of $O^{2-}, N^{3-}, F^-, Mg^{2+}, Na^+$ and AA^{3+} is

(A) $Al^{3+} < Mg^{2+} < Na^+ < F^- < O^{2-} < N^{3-}$
(B) $Al^{3+} < Na^+ < Mg^{2+} < O^{2-} < F^- < N^{3-}$
(C) $N^{3-} < F^- < O^{2-} < Mg^{2+} < Na^+ < Al^{3+}$
(D) $N^{3-} < O^{2-} < F^- Na^+ < Mg^{2+} < Al^{3+}$

Q11 JEE Main 2020 - 6 September (Morning)

The set that contains atomic numbers of only transition elements, is

(A) 21,32,53,64
(B) 9,17,34,38
(C) 37,42,50,64
(D) 21,25,42,72

Q12 JEE Main 2020 - 6 September (Evening)

The atomic number of Unnilunium is

Q13 JEE Main 2020 - 7 January (Morning)

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

(A) $-296,\ -325,\ -333,\ -349$
(B) $-333,\ -349,\ -325,\ -296$
(C) $-349,\ -333,\ -325,\ -296$
(D) $-325,\ -333,\ -349,\ -296$

Q14 JEE Main 2020 - 7 January (Morning)

Atomic radius of Ag is similar to

(A) Cu
(B) Hg
(C) Au
(D) Ni

Q15 JEE Main 2020 - 7 January (Evening)

Which one of the following amongs each pair will release maximum energy on gaining one electron $(A = F,\ Cl)\,,\ (B = S,\ Se)\,,\ (C = Li,\ Na)$

(A) $(A) = Cl,\ (B = S,\ Se)\,,\ (C = Li,\ Na)$
(B) $(A) = F,\ (B) = Se,\ (C) = Li$
(C) $(A) = F,\ (B) = Se,\ (C) = Na$
(D) $(A) = Cl,\ (B) = S,\ (C) = Na$

Q16 JEE Main 2020 - 8 January (Morning)

The third ionization enthalpy is minimum for :

(A) Mn
(B) Co
(C) Fe
(D) Ni

Q17 JEE Main 2020 - 8 January (Morning)

The first ionization energy (in kJ/mol) of $Na,\ Mg,\ Al,\ Si$ in $KJ\ mol^{-1}$ respectively are:

(A) $786, 737, 577, 496$

(B) $497,\ 577,\ 737,\ 786$
(C) $786,\ 739,\ 577,\ 497$
(D) $739,\ 577,\ 786,\ 487$

Q18 JEE Main 2020 - 8 January (Evening)

The increasing order of the atomic radii of the following elements is :
$(a)\ C$
$(b)\ O$
$(c)\ F$
$(d)\ Cl$
$(e)\ Br$
(A) $Br > Cl > C > O > F$
(B) $Br < Cl < C < O < F$
(C) $Cl < C < O < F < Br$
(D) $C > F > O > Br > Cl$

Q19 JEE Main 2020 - 9 January (Morning)

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 statement are :
(A) $(i),\ (ii),\ (iii),\ (iv)$
(B) $(i),\ (iii),\ (iv)$
(C) $(ii),\ (iii),\ (iv)$
(D) $(i),\ (ii),\ (iii)$

Answer Key

Q1 (D) **Q2** (A) **Q3** (A) **Q4** (B)

Q5 (A) **Q6** (B) **Q7** (D) **Q8** (B)

Q9 (C) **Q10** (A) **Q11** (D) **Q12** (101)

Q13 (B) **Q14** (C) **Q15** (A) **Q16** (C)

Q17 (A) **Q18** (A) **Q19** (D)