Chapter 01 Periodic Table and Periodic Properties

Practice Section-01

Q.1 The first attempt to classify elements systematically was made by -
(1) Mendeleev (2) Newland (3) Lother Meyer (4) Dobereiner

Q.2 Atomic weight of an element X is 39, and that of element Z is 132. atomic weight of their intermediate element Y, as per dobereiner triad, will be
(1) 88.5 (2) 93.0 (3) 171 (4) 85.5

Q.3 Which of the following is not Dobereiner triad
(1) Li, Na, K (2) Mg, Ca, Sr (3) Cl, Br, I (4) S, Se, Te

Q.4 The law of triads is not applicable on
(1) Cl, Br, I (2) Na, K, Rb (3) S, Se, Te (4) Ca, Sr, Ba

Q.5 For which of the pair Newland octave rule is not applicable –
(1) Li, Na (2) C, Si (3) Mg, Ca (4) Cl, Br

Q.6 Which of the following element was present in Mendeleev's periodic table?
(1) Sc (2) Tc (3) Ge (4) None of these

Q.7 In Lother Meyer's curve, the halogens occupy positions on the
(1) descending portion of the curve (2) ascending portion of the curve
(3) peak portion of the curve (4) no fixed position on the curve

Q.8 Who is called the father of chemistry?
(1) Faraday (2) Priestley (3) Rutherford (4) Lavoisier

Practice Section-02

Q.1 Which of the following set of atomic numbers represents representative element
(1) 5, 13, 30, 53 (2) 11, 33, 58, 34 (3) 5, 17, 31, 64 (4) 9, 31, 53, 83

Q.2 The electronic configuration of an elements is $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}\ 4s^1$ What is the atomic number of next element of the same group which is recently discovered :-
(1) 20 (2) 119 (3) 111 (4) None

Q.3 Select the correct matching of given atomic number with their IUPAC symbol and IUPAC official name :-
(1) 104 – Unq – Rutherfordium
(2) 110 – Une – Darmstadtium
(3) 107 – Uno – Bohrium
(4) 102 – Unt – Nobelium

Q.4 Which of the following statement is wrong :-
(1) Total no. of liquid elements in the periodic table.....Six
(2) First metal element in the periodic table is....Li
(3) All type of elements are present in 6th period
(4) Iodine is a gaseous element.

Q.5 According to Soviet scientists name of the element which has atomic number 104-
(1) Rutherfordium (2) Kurchatovium (3) Unnilquadium (4) Not exist

Q.6 Which of the following is/are considered as metalloids?
(1) As, Sb (2) Po, Sb (3) Te, Ge (4) All of these

Q.7 Which of the following pair of atomic numbers represents s-block element?
(1) 7, 15 (2) 6, 12 (3) 9, 17 (4) 3, 20

Q.8 The element with atomic number 55 belongs to which block of the periodic table
(1) s-block (2) p-block (3) d-block (4) f-block

Q.9 The lanthanide contraction is responsible for the fact that
(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.10 Which of the following factors may be regarded as the main cause the lanthanide contraction ?
(1) Poor shielding of one of 4f electron by another in the subshell
(2) Effective shielding of one of 4f electrons by another in the subshell
(3) Poorer shielding of 5d electrons by 4f electrons
(4) greater shielding of 5d electrons by 4f electrons

Q.11 lanthanoid contraction is caused due to -
(1) The same effective nuclear charge from Ce to Lu
(2) The imperfect shielding on outer electrons by 4f electrons from the nuclear charge
(3) The appreciable shielding on outer electrons by 4f electrons from the nuclear charge
(4) The appreciable shielding on outer electrons by 5d electrons from the nuclear charge

Practice Section-03

Q.1 From the given set of species, point out the species from each set having least atomic radius:-
(A) O^{-2}, F^{-}, Na^{+} (B) Ni, Cu, Zn (C) Li, Be, Mg (D) He, Li^{+}, H^{-}
Correct answer is :-
(1) O^{-2}, Cu, Li, H^{-} (2) Na^{+}, Ni, Be, Li^{+} (3) F^{-}, Zn, Mg, He (4) Na^{+}, Cu, Be, He

Q.2 Which of the following pairs of elements have almost similar atomic radii :-
(1) Zr, Hf (2) Mo, W (3) Co, Ni (4) All

Q.3 Screening effect is not observed in :-
(1) He^{+} (2) Li^{+2} (3) H (4) All of these

Q.4 The screening effect of d- electrons is :-
(1) Equal to the p - electrons (2) Much more than p - electrons
(3) Same as f - electrons (4) Less than p – electrons

Q.5 The IP_1, IP_2, IP_3, IP_4 and IP_5 of an element are 7.1, 14.3, 34.5, 46.8, 162.2 eV respectively. The element is likely to be:-
(1) Na (2) Si (3) F (4) Ca

Q.6 In the given process which oxidation state is more stable.
$M(g) \longrightarrow M^{+}(g)$ $IE_1 = 7.9$ eV
$M^{+}(g) \longrightarrow M^{+2}(g)$ $IE_2 = 15.5$ eV
(1) M^{+} (2) M^{+2} (3) Both (4) None

Q.7 The correct order of decreasing second ionization energy of Li, Be, Ne, C, B
(1) Ne > B > Li > C > Be (2) Li > Ne > C > B > Be (3) Ne > C >B > Be > Li (4) Li > Ne > B > C > Be

Q.8 The first ionisation enthalpy of Boron is slightly less than Beryllium because :-
(1) 2p-electron is more shielded than 2s-electron
(2) effective nuclear charge in Beryllium is more than Boron
(3) of inert pair effect
(4) lanthanoid contraction

Q.9 The correct order of ionic radius is -
(1) Ce > Sm > Tb > Lu (2) Lu > Tb > Sm > Ce (3) Tb > Lu > Sm > Ce (4) Sm > Tb > Lu > Ce

Q.10 Ce^{3+}, La^{3+}, Pm^{3+} and Yb^{3+} have ionic radii in the increasing order as –
(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.11 The reduction in atomic size with increase in atomic number is a characteristic of elements of -
(1) d-block (2) f-block (3) Radioactive series (4) High atomic masses

Q.12 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 ionisation enthalpy ?
(1) Cr (2) Mn (3) Fe (4) V

Q.13 Which one of the following ions has the highest value of ionic radius ?
(1) O^{2-} (2) B^{3+} (3) Li^{+} (4) F^{-}

Practice Section-04

Q.1 The correct order of electron affinity is :-
(1) Be < B < C < N (2) Be < N < B < C (3) N < Be < C < B (4) N < C < B < Be

Q.2 Second electron affinity of an element is :–
(1) Always exothermic (2) Endothermic for few elements
(3) Exothermic for few elements (4) Always endothermic

Q.3 Which arrangement represents the correct order of electron gain enthalpy (with negative sign) of the given atomic species ?
(1) S < O < Cl < F (2) O < S < F < Cl (3) Cl < F < S < O (4) F < Cl < O < S

Q.4 Which of the following elements have the different value of electronegativity :-
(1) H (2) S (3) Te (4) P

Q.5 Electronegativity of the following elements increases in the order.
(1) O, N, S, P (2) P, S, N, O (3) P, N, S, O (4) S, P, N, O

Q.6 Correct order of electronegativity of N, P, C and Si is :–
(1) N < P < C < Si (2) N > C > Si > P (3) N = P > C = Si (4) N > C > P > Si

Q.7 The electronegativities of F and H are 4.0 and 2.1 respectively. The percent ionic character in H and F bond is
(1) 43 (2) 34 (3) 94 (4) 39

Q.8 Which of the following order is correct for acidic property –
(1) $SiH_4 > PH_3 > H_2S$ (2) $SiH_4 = PH_3 = H_2S$ (3) $SiH_4 < PH_3 > H_2S$ (4) $SiH_4 < PH_3 < H_2S$

Q.9 Among Al_2O_3, SiO_2, P_2O_3 and SO_2 the correct order of acid strength is :
(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 :
$O_{(g)} + e^- = O^-_{(g)}\ \Delta H° = -142\ kJ\ mol^{-1}$
$O^-_{(g)} + e^- = O^{2-}_{(g)}\ \Delta H° = 844\ kJ\ mol^{-1}$
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 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 -
(1) F > Cl > Br > I (2) Cl > F > Br > I (3) Br > Cl > I > F (4) I > Br > Cl > F

ANSWER KEY

PRACTICE SECTION-01

Que.	1	2	3	4	5	6	7	8
Ans:	4	4	2	2	4	4	2	4

PRACTICE SECTION-02

Que.	1	2	3	4	5	6	7	8	9	10	11
Ans:	4	3	1	4	1	4	4	1	3	1	2

PRACTICE SECTION-03

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13
Ans:	2	4	4	4	2	1	4	1	1	2	2	1	1

PRACTICE SECTION-04

Que.	1	2	3	4	5	6	7	8	9	10	11
Ans:	2	4	2	2	2	4	1	4	4	1	2