Chapter 01

Periodic Table and Periodic Properties

NEET RANKER'S STUFF

Q.1 Consider the isoelectronic species, Na^+, Mg^{2+}, F^- and O^{2-}. The correct order of increasing length of their radii is _____.

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

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

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

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

Q.2 Which of the following is not an actinoid ?

(1) Curium (Z = 96) (2) Californium (Z = 98)

(3) uranium (Z = 92) (4) Terbium (Z = 65)

Q.3 The order of screening effect of electrons of s, p, d and f orbitals of a given shell of an atom on its outer shell electrons is :

(1) s > p > d > f (2) f > d > p > s

(3) f < d < s < p (4) f > p > s > d

Q.4 The first ionization enthalpies of Na, Mg, Al and Si are in the order :

(1) Na < Mg < Si < Al (2) Na > Mg > Al > Si

(3) Na < Al < Mg < Si (4) Na > Al > Mg > Si

Q.5 The electronic configuration of gadolinium (Atomic number 64) is

(1) [Xe] $4f^3\ 5d^5\ 6s^2$ (2) [Xe] $4f^7\ 5d^2\ 6s^1$

(3) [Xe] $4f^7\ 5d^1\ 6s^2$ (4) [Xe] $4f^8\ 5d^6\ 6s^2$

Q.6 The statement that is not correct for periodic classification of elements is :

(1) The properties of elements are periodic function of their atomic numbers.

(2) Non metallic elements are less in number than metallic elements.

(3) For transition elements, the 3d-orbitals are filled with electrons after 3p-orbitals and before 4s-orbitals.

(4) The first ionisation enthalpies of elements generally increase with increase in atomic number as we go along a period.

Q.7 Among halogens, the correct order of amount of energy released in electron gain (electron gain enthalpy) is :

(1) F > Cl > Br > I (2) F < Cl < Br < I

(3) F < Cl > Br > I (4) F < Cl < Br > I

Q.8 The period number in the long form of the periodic table is equal to

(1) Magnetic quantum number of any element of the period.

(2) atomic number of any element of the period.

(3) Maximum Principal quantum number of any element of the period.

(4) Maximum Azimuthal quantum number of any element of the period.

Q.9 The elements in which electrons are progressively filled in 4f-orbital are called

(1) actinoids (2) transition elements

(3) lanthanoids (4) halogens

Q.10 Which of the following is the correct order of size of the given species.

(1) $I > I^- > I^+$ (2) $I^+ > I^- > I$

(3) $I > I^+ > I^-$ (4) $I^- > I > I^+$

Q.11 The element with atomic number 57 belongs to

(1) s-block (2) p-block

(3) d-block (4) f-block

Q.12 The last element of the p-block in 6th period is represented by the outermost electronic configuration.

(1) $7s^2\ 7p^6$ (2) $5f^{14}\ 6d^{10}\ 7s^2\ 7p^0$

(3) $4f^{14}\ 5d^{10}\ 6s^2\ 6p^6$ (4) $4f^{14}\ 5d^{10}\ 6s^2\ 6p^4$

Q.13 Which of the elements whose atomic number are given below, cannot be accomodate in the present set up of the long form of the periodic table ?

(1) 107 (2) 118 (3) 126 (4) 102

Q.14 The electronic configuration of the element which is just above the element with atomic number 43 in the same group is _____.

(1) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^5 4s^2$

(2) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^5 4s^3\ 4p^6$

(3) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^6 4s^2$

(4) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^7 4s^2$

Q.15 The element with atomic numbers 35, 53, and 85 are all _____.

(1) noble gases (2) halogens

(3) heavy metals (4) light metals

Q.16 Electronic configurations of four elements A, B, C and D are given below :

(A) $1s^2\ 2s^2\ 2p^6$ (B) $1s^2\ 2s^2\ 2p^4$

(C) $1s^2\ 2s^2\ 2p^6\ 3s^1$ (D) $1s^2\ 2s^2\ 2p^5$

Which of the following is the correct order of increasing tendency to gain electron :

(1) A < C < B < D (2) A < B < C < D

(3) D < B < C <A (4) D < A < B < C

Q.17 The element with the highest ionisation potential is

(1) oxygen (2) nitrogen

(3) carbon (4) boron

Q.18 Which of the following elements has the least ionization potential ?

(1) Li (2) Cs (3) Mg (4) Ca

Q.19 The ionisation potential of which element is highest?

(1) H (2) He (3) Ar (4) F

Q.20 The first ionisation potentials in electron volts of nitrogen and oxygen atoms are respectively given by :

(1) 14.6, 13.6 (2) 13.6, 14.6

(3) 13.6, 13.6 (4) 14.6, 14.6

Q.21 The maximum ionisation potential in a period is shown by

(1) alkali metals

(2) inert gases

(3) representative elements

(4) halogens

Q.22 Ionisation energy of nitrogen is more than oxygen because :

(1) nucleus has more attraction for electrons

(2) half filled 'p' orbitals are more stable

(3) nitrogen atom is small

(4) more penetration effect

Q.23 Amongst the following elements (whose electronic configuration are given below) the one having highest ionisation energy is

(1) [Ne] $3s^2\ 3p^1$ (2) [Ne] $3s^2\ 3p^3$

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

Q.24 Which of the following transitions involves maximum energy ?

(1) $M^- (g) \rightarrow M(g)$ (2) $M^{2+} (g) \rightarrow M^{3+} (g)$

(3) $M^+ (g) \rightarrow Mg^{2+} (g)$ (4) $M(g) \rightarrow M^+ (g)$

Q.25 A sudden large jump between the values of second and third ionisation energies of an element would be associated with the electronic configuration

(1) $1s^2, 2s^2 2p^6, 3s^1$

(2) $1s^2, 2s^2 2p^6, 3s^2 3p^1$

(3) $1s^2, 2s^2 2p^6, 3s^2 3p^2$

(4) $1s^2, 2s^2 2p^6, 3s^2$

Q.26 The incorrect statement among the following is

(1) The first ionisation potential of Al is less than the first ionisation potential of Mg

(2) The second ionisation potential of Mg is greater than the second ionisation potential of Na

(3) The first ionisation potential of Na is less than the first ionisation potential of Mg

(4) The third ionisation potential of Mg is greater than third ionisation potential of Al

Q.27 Identify the least stable ion amongst the following

(1) Li^- (2) Be^- (3) B^- (4) C^-

Q.28 Which of the following elements has the maximum electron affinity ?

(1) oxygen (2) chlorine

(3) fluorine (4) nitrogen

Q.29 Electron affinity of X would be equal to

(1) electron affinity of X^-

(2) ionisation potential of X^-

(3) ionisation potential of X

(4) none of the above

Q.30 Halogen with highest electron affinity

(1) I (2) Br (3) F (4) Cl

Q.31 Increasing order of electron affinity is

(1) N < O < Cl < Al (2) O < N < Al < Cl

(3) N < Al < O < Cl (4) Cl < N < O < Al

Q.32 The electronegativity of the following elements increases in the order of :

(1) C, N, Si, P (2) N, Si, C, P

(3) Si, P, C, N (4) P, Si, N, C

Q.33 In the series carbon, nitrogen, oxygen and fluorine, electronegativity

(1) Decreases from carbon to fluorine

(2) Remains constant

(3) Decreases from carbon to oxygen and then increases

(4) Generally increases from carbon to fluorine

Q.34 The outermost electronic configuration of the most electronegative element is

(1) $ns^2 np^3$ (2) $ns^2 np^4$

(3) $ns^2 np^5$ (4) $ns^2 np^6$

Q.35 Of the following elements, which one has the highest electronegativity?

(1) I (2) Br (3) Cl (4) F

Q.36 Which one of the following configurations represents a metallic character ?

(1) 2, 8, 2 (2) 2, 8, 4

(3) 2, 8, 7 (4) 2, 8, 8

Q.37 The most non-metallic element among the following is

(1) $1s^2, 2s^2 2p^6$ (2) $1s^2, 2s^2 2p^5$

(3) $1s^2, 2s^2 2p^4$ (4) $1s^2, 2s^2 2p^3$

Q.38 Atoms of which of the following group lose electrons most easily?

(1) Li, Na, K (2) Cl, Br, I

(3) O, S, Se (4) N, P, As

Q.39 Among the following outermost configurations of transition metals which shows the highest oxidation state, is

(1) $3d^3 4s^2$ (2) $3d^5 4s^1$

(3) $3d^5\ 4s^2$ (4) $3d^6\ 4s^2$

Q.40 Match the Column-I and Column-II and select correct answer by given codes.

Column-I (Year)		Column-II (The number of elements discovered)	
(A)	1800	(p)	118
(B)	1865	(q)	63
(C)	At present	(r)	31

(1) A – (q), B – (p), C – (r)

(2) A – (r), B – (p), C – (q)

(3) A – (q), B – (r), C – (p)

(4) A – (r), B – (q), C – (p)

Q.41 Match the columns.

	Column-I		Column-II
(A)	Newland law of octaves	(p)	Atomic mass vs Atomic volume
(B)	Mendeleev	(q)	Li, Na, K
(C)	Electronic configuration	(r)	One to seven groups sub divided into group A and B
(D)	Lother Meyer	(s)	Periodic repetition of properties of elements
(E)	Dobereiner's triad	(t)	Only 56 elements known

(1) A–(t); B–(s); C–(r); D–(p); E–(q)

(2) A–(t); B–(r); C–(s); D–(p); E – (q)

(3) A–(t); B–(r); C–(s); D–(q); E – (p)

(4) A–(r); B–(t); C–(s); D–(p); E – (q)

ASSERTION REASON TYPE QUESTIONS

Direction: Each of these questions contain two Statements, Assertion and Reason. Each of these questions also has four alternative choices, only one of which is the correct answer. You have to select one of the codes (A), (B), (C) and (D) given below.

(A) Assertion is correct, reason is correct; reason is a correct explanation for assertion.

(B) Assertion is correct, reason is correct; reason is not a correct explanation for assertion.

(C) Assertion is correct, reason is incorrect.

(D) Assertion is incorrect, reason is correct.

Q.42 **Assertion:** In a triad, the three elements present have same gaps of atomic masses.

Reason: Elements in a triad have similar properties.

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

Q.43 **Assertion:** Smaller the size of an atom greater is the electronegativity.

Reason: Electronegativity refers to the tendency of atom so share electrons with other atom.

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

Q.44 **Assertion:** Electron gain enthalpy can be exothermic or endothermic.

Reason: Electron gain enthalpy provides a measure of the ease with which an atom adds an electron to form anion.

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

Q.45 **Assertion:** Atomic size increases along a period.

Reason: Effective nuclear charge increases as the atomic number increases resulting in the increased attraction of electrons to the nucleus.

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

Q.46 **Assertion:** According to Mendeleev, periodic properties of elements is a function of their atomic number.

Reason: Atomic number is equal to the number of protons.

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

Q.47 **Assertion:** Hydrogen can be placed in group 1.

Reason: Hydrogen can gain an electron to achieve a noble gas arrangement.

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

Q.48 **Assertion:** Alkali metals have last value of ionization energy within a period.

Reason: They precede alkaline earth metal in periodic table

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

Q.49 **Assertion:** Second ionization enthalpy will be higher the first ionization enthalpy.

Reason: Ionization enthalpy is a quantitative measure of the tendency of an element to lose electron.

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

Q.50 **Assertion:** Second period consists of 8 elements.

Reason: Number of elements in each period is four times the number of atomic orbitals available in the energy level that is being filled.

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

Q.51 **Assertion:** Helium is placed in group 18 along with p-block elements.

Reason: It shows properties similar to p-block elements.

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

ANSWER KEY

NEET RANKER'S STUFF

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	4	1	3	3	3	3	3	3	4	3	3	3	1	2
Que.	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Ans.	1	2	2	2	1	2	2	2	2	4	2	2	2	2	4
Que.	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**
Ans.	3	3	4	3	4	2	2	1	3	4	2	4	3	2	3
Que.	**46**	**47**	**48**	**49**	**50**	**51**									
Ans.	4	2	2	2	3	3									