

PRE-MEDICAL

INORGANIC CHEMISTRY

ENTHUSIAST | LEADER | ACHIEVER

H																	He	
Li	Be											B	C	N	O	F	Ne	
Na	Mg											Al	Si	P	S	Cl	Ar	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts	Og	
			Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu		
			Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr		

EXERCISE

Periodic Table

ENGLISH MEDIUM

EXERCISE-I (Conceptual Questions)
Build Up Your Understanding
DEVELOPMENT OF PERIODIC TABLE

- Mendeleev's periodic table is based on :-
 (1) Atomic number
 (2) Increasing order of number of protons
 (3) Electronic configuration
 (4) None of the above
PT0001
- Which of the following is/are Dobereiners triad :-
 (a) P, As, Sb (b) Cu, Ag, Au
 (c) Fe, Co, Ni (d) S, Se, Te
 Correct answer is :-
 (1) a and b (2) b and c (3) a and d (4) All
PT0002
- Which of the following sets of elements follows Newland's octave rule :-
 (1) Be, Mg, Ca (2) Na, K, Rb
 (3) F, Cl, Br (4) B, Al, Ga
PT0003
- Which are correct match :-
 (a) Eka silicon – Be
 (b) Eka aluminium – Ga
 (c) Eka manganese – Tc
 (d) Eka scandium – B
 (1) b, c (2) a, b, d (3) a, d (4) All
PT0004
- Atomic wt. of P is 31 and Sb is 120. What will be the atomic wt. of As, as per Dobereiners triad rule :-
 (1) 151 (2) 75.5
 (3) 89.5 (4) Unpredictable
PT0005
- The places that were left empty by Mendeleev's were, for:-
 (1) Aluminium & Silicon
 (2) Galium and germinium
 (3) Arsenic and antimony
 (4) Molybdenum and tungstun
PT0006
- Which is not anomalous pair of elements in the Medeleev's periodic table :-
 (1) Ar and K (2) Co and Ni
 (3) Te and I (4) Al and Si
PT0007

- The law of triads is applicable to :-
 (1) Os, Ir, Pt (2) Ca, Sr, Ba
 (3) Fe, Co, Ni (4) Ru, Rh, Pt
PT0008
- Elements which occupied position in the lother meyer curve, on the peaks, were :-
 (1) Alkali metals
 (2) Highly electro positive elements
 (3) Elements having large atomic volume
 (4) All
PT0009
- In a period the elements are arranged in :-
 (1) Decreasing order of nuclear charge
 (2) Decreasing order of No. of electrons
 (3) Increasing order of nuclear charge
 (4) In order of same nuclear charge
PT0010
- Which of the following statement is wrong :-
 (1) 2nd period contain 8 elements
 (2) 3rd period contains 18 elements
 (3) 1st period contains two non metals
 (4) In p-block, metal, nonmetal and metalloids are present
PT0011
- IUPAC name of the element placed just after actinide series :-
 (1) Unniltrium (2) Unnilpentium
 (3) Unnilquadium (4) Ununbium
PT0013
- Which statement is wrong for the long form of periodic table :-
 (1) Number of periods are 7 and groups 18
 (2) No. of valence shell electrons in a period are same
 (3) IIIrd B group contains 32 elements
 (4) Lanthanides and actinides are placed in same group
PT0014
- Which of the following statement is false :-
 (1) Elements of ns^2np^6 electronic configuration lies in 1st to 6th period
 (2) Typical elements lies in 3rd period
 (3) The seventh period will accommodate thirty two elements
 (4) Boron and silicon are diagonally related
PT0017

15. Among the Lanthanides the one obtained by synthetic method is :-
 (1) Lu (2) Pm (3) Pr (4) Ce

PT0018

16. Atomic weight of Cl is 35.5 and I is 127. What will be the atomic weight of Br, as per Dobereiners triad rule :-
 (1) 81.2 (2) 85 (3) 95 (4) 162

PT0237

17. Elements which occupied ascending positions on Lothar meyer curve are :-
 (1) Alkali metals (2) Alkaline earth metals
 (3) Halogens (4) Metaloids

PT0238

PERIOD, GROUP AND BLOCK

18. Which of the following set of elements belongs to same period :-
 (1) Zn, Cd, Hg (2) Fr, Ra, U
 (3) K, Ca, Ag (4) None

PT0019

19. The element with atomic number $Z = 115$ will be placed in :-
 (1) 7th period, IA group (2) 8th period, IVA group
 (3) 7th period, VA group (4) 6th period, VB group

PT0020

20. In 6th period of the modern periodic table, electronic energy levels are in the order :-
 (1) 6s, 4f, 5d, 6p (2) 6s, 6p, 4f, 5d
 (3) 4f, 5d, 6s, 6p (4) None

PT0022

21. The IUPAC name of the element which is placed after Db_{105} in the periodic table, will be :-
 (1) Un nil pentium (2) Un un nilium
 (3) Un nil hexium (4) Un nil quadium

PT0024

22. The element with atomic number $Z=118$ will belong to
 (1) Noble gas (2) Transition metal
 (3) Alkali metal (4) Alkaline earth metal

PT0026

23. The atom having the valence shell electronic configuration $4s^2 4p^2$ would be in:-
 (1) Group II A and period 3
 (2) Group II B and period 4
 (3) Group IV A and period 4
 (4) Group IV A and period 3

PT0027

24. The electronic configuration of d-block elements is exhibited by :-
 (1) $ns^{0-2}(n-1)d^{1-10}$ (2) $ns^2(n-1)d^{10}$
 (3) $(n-1)d^{10}s^2$ (4) ns^2np^5

PT0028

25. The element having electronic configuration $4f^{14} 5d^0 6s^2$ belongs to :-
 (1) d-block, 12th group
 (2) f-block, III B group
 (3) f-block, 14th group
 (4) s-block, 2nd group

PT0030

26. Element with the electronic configuration given below, belong to which group in the periodic table $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^{10}, 4s^2 4p^6 4d^{10}, 5s^2 5p^3$
 (1) 3rd (2) 5th (3) 15th (4) 17th

PT0031

27. Which of the following electronic configuration belongs to inert gas elements :-
 (1) $ns^2 (n-1)d^{10}$ (2) $ns^2 (n-1)s^2 p^6$
 (3) $ns^2 np^6$ (4) None

PT0033

28. From atomic number 58 to 71, elements are placed in :-
 (1) 5th period and III A group
 (2) 6th period and III B group
 (3) separate period and group
 (4) 7th period and IV B group

PT0034

29. Elements having $ns^2 np^6$ valence shell electronic configuration lies in :-
 (1) '0' gp. and 1st-7th period
 (2) 18th gp. and 2nd-6th period
 (3) 18th gp and 1st-6th period
 (4) All are correct

PT0036

30. The electronic configuration of elements X and Z are $1s^2 2s^2 2p^6 3s^2 3p^5$ and $1s^2 2s^2 2p^5$ respectively. What is the position of element X with respect to position of Z in the periodic table -
 (1) Just below Z (2) Just above Z
 (3) Left to the Z (4) right to the Z

PT0038

31. Which of the following sequence contains atomic number of only representative elements
 (1) 55, 12, 29, 53
 (2) 13, 33, 60, 83
 (3) 3, 33, 53, 87
 (4) 22, 33, 55, 66

PT0039

32. Uranium (At No. - 92) is the last natural element in the periodic table. The last element of the periodic table which is recently discovered is Uub. What will be the total number of transuranic elements in the periodic table :-
 (1) 21 (2) 20 (3) 11 (4) 12

PT0040

33. Which two elements are in same period as well as same group of modern periodic table :-
 (1) $Z = 23$, $Z = 31$
 (2) $Z = 65$, $Z = 66$
 (3) $Z = 52$, $Z = 87$
 (4) $Z = 58$, $Z = 46$

PT0041

34. Which of the following statement is not correct for given electronic configuration
 $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^{10}, 4s^2 4p^6 4d^{10} 4f^{14}, 5s^2 5p^6 5d^{10}, 6s^2$
 (1) It belongs to IIB group and 6th period
 (2) It is liquid at room temperature
 (3) It is a transition element
 (4) It is not used in high temperature thermometer

PT0042

35. For the element $Z = 120$, in which family would you place -
 (1) Group 18, Inert gas
 (2) Group 2, Alkaline earth metal
 (3) Group 15, Nitrogen
 (4) Group 3, Inner transition element

PT0239

36. Which of the following properties is a periodic function -
 (1) Heat of fusion
 (2) Heat of vaporisation
 (3) Energy of atomization
 (4) Atomic radius

PT0240

37. Select the correct match -

$P = ns^2 np^4$	(A) Group no = 17, p-block
$Q = (n-1)d^2 ns^2$	(B) Group no = 4, d-block
$R = (n-2)f^7 (n-1)d^1 ns^2$	(C) Group no = 16, p-block
$S = (n-1)d^{10} ns^2 np^5$	(D) Group no = 3, f-block
(1) (P-A), (Q-B), (R-C), (S-D)	
(2) (P-C), (Q-B), (R-D), (S-A)	
(3) (P-A), (Q-C), (R-B), (S-D)	
(4) (P-B), (Q-D), (R-C), (S-A)	

PT0241

38. No. of letters used for giving symbol to new discovered element which have not been given official name by IUPAC

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

PT0242

39. The filling of 4f orbitals begins with

(1) Cerium	(2) Promethium
(3) Lanthanum	(4) Gadolinium

PT0243

40. In which of the following blocks, metals are found.

(1) s	(2) p
(3) d	(4) All

PT0244

Ze_{eff}, SCREENING CONSTANT & ATOMIC RADIUS

41. The formula for effective nuclear charge is (if σ is screening constant)

(1) $Z - \sigma$	(2) $Z + \sigma$
(3) $Z \sigma^{-1}$	(4) $Z \sigma$

PT0046

42. According to Slater rule, Effective nuclear charge in group generally :-

(1) Increases down the group
(2) Decreases down the group
(3) Remains constant
(4) First increases then decreases

PT0047

43. In sodium atom the screening is due to :-

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

PT0048

- 44.** The correct order of size would be:-
 (1) $\text{Ni} < \text{Pd} \approx \text{Pt}$ (2) $\text{Pd} < \text{Pt} < \text{Ni}$
 (3) $\text{Pt} > \text{Ni} > \text{Pd}$ (4) $\text{Pd} > \text{Pt} > \text{Ni}$
PT0050
- 45.** Which of the following order of radii is correct
 (1) $\text{Li} < \text{Be} < \text{Mg}$ (2) $\text{H}^+ < \text{Li}^+ < \text{H}^-$
 (3) $\text{O} < \text{F} < \text{Ne}$ (4) $\text{Na}^+ > \text{F}^- > \text{O}^{2-}$
PT0051
- 46.** K^+ , Ar , Ca^{2+} and S^{2-} contains -
 (1) Same electronic configuration and atomic volume
 (2) Different electronic configuration but same IP.
 (3) Same electronic configuration but different atomic volume
 (4) None
PT0052
- 47.** Which of the following is not isoelectronic series :-
 (1) Cl^- , P^{3-} , Ar (2) N^{3-} , Ne , Mg^{+2}
 (3) B^{+3} , He , Li^+ (4) N^{3-} , S^{2-} , Cl^-
PT0053
- 48.** Atomic radii of Fluorine and Neon in Angstrom units are given by :-
 (1) 0.72, 1.60 (2) 1.60, 1.60
 (3) 0.72, 0.72 (4) None of these
PT0055
- 49.** Which of the following has largest radius :-
 (1) $1s^2 2s^2 2p^6 3s^2$
 (2) $1s^2 2s^2 2p^6 3s^2 3p^1$
 (3) $1s^2 2s^2 2p^6 3s^2 3p^3$
 (4) $1s^2 2s^2 2p^6 3s^2 3p^5$
PT0056
- 50.** Which of the following order of atomic/ionic radius is not correct :-
 (1) $\text{I}^- > \text{I} > \text{I}^+$ (2) $\text{Mg}^{+2} > \text{Na}^+ > \text{F}^-$
 (3) $\text{P}^{+5} < \text{P}^{+3}$ (4) $\text{Li} > \text{Be} > \text{B}$
PT0057
- 51.** In the lithium atom screening effect of valence shell electron is caused by-
 (1) Electrons of K and L shell
 (2) Electrons of K shell
 (3) Two electrons of 1^{st} and one of 2^{nd} shell
 (4) One e^- of K shell
PT0058
- 52.** Correct order of ionic radii is
 (1) $\text{Ti}^{4+} < \text{Mn}^{7+}$ (2) $^{37}\text{Cl}^- < ^{35}\text{Cl}^-$
 (3) $\text{K}^+ > \text{Cl}^-$ (4) $\text{P}^{3+} > \text{P}^{5+}$
PT0059
- 53.** S^{2-} is not isoelectronic with :-
 (1) Ar (2) Cl^- (3) HS^- (4) Ti^{+3}
PT0061
- 54.** The best reason to account for the general tendency of atomic diameters to decrease as the atomic numbers increase within a period of the periodic table is the fact that
 (1) Outer electrons repel inner electrons
 (2) Closer packing among the nuclear particles is achieved
 (3) The number of neutrons increases
 (4) The increasing effective nuclear charge exerts a greater attractive force on the electrons
PT0062
- 55.** In an anion :-
 (1) Number of proton decreases
 (2) Protons are more than electrons
 (3) Effective nuclear charge is more
 (4) Radius is larger than neutral atom
PT0063
- 56.** Which of the following ion has largest size :-
 (1) F^- (2) Al^{+3} (3) Cs^+ (4) O^{2-}
PT0065
- 57.** Spot the incorrect order of atomic radii :-
 (1) $r_{\text{Cu}} > r_{\text{Zn}}$ (2) $r_{\text{Cl}} > r_{\text{F}}$
 (3) $r_{\text{P}} > r_{\text{S}}$ (4) $r_{\text{Sc}} > r_{\text{Ti}}$
PT0067
- 58.** Which of the following orders of atomic radii are correct :-
 (a) $\text{Li} < \text{Be} < \text{Na}$ (b) $\text{Ni} < \text{Cu} < \text{Zn}$
 (c) $\text{Ti} > \text{V} > \text{Cr}$ (d) $\text{Ti} > \text{Zr} > \text{Hf}$
 Correct answer is :-
 (1) All (2) a, b
 (3) b, c (4) b, d
PT0068
- 59.** Decreasing order of size of ions is :-
 (1) $\text{Br}^- > \text{S}^{2-} > \text{Cl}^- > \text{N}^{3-}$
 (2) $\text{N}^{3-} > \text{S}^{2-} > \text{Cl}^- > \text{Br}^-$
 (3) $\text{Br}^- > \text{Cl}^- > \text{S}^{2-} > \text{N}^{3-}$
 (4) $\text{N}^{3-} > \text{Cl}^- > \text{S}^{2-} > \text{Br}^-$
PT0070

60. Which of the following statement is wrong
- (1) According to Slater, Z_{eff} in group remains constant
 - (2) In a period atomic size decreases
 - (3) Screening effect in a period remains constant
 - (4) In a period atomic radius of inert gas element is maximum

PT0071

61. Correct order of r_{metallic} for 3d series is ?
- (1) $\text{Fe} < \text{Co} < \text{Ni}$
 - (2) $\text{Cr} < \text{Mn} > \text{Fe}$
 - (3) $\text{Sc} < \text{Ti} < \text{V}$
 - (4) $\text{Cu} > \text{Zn}$

PT0245

62. According to Slater's rule, order of effective nuclear charge for last electron in case of Li, Na and K :-

- (1) $\text{Li} > \text{Na} > \text{K}$
- (2) $\text{K} > \text{Na} > \text{Li}$
- (3) $\text{Na} > \text{Li} > \text{K}$
- (4) $\text{Li} < \text{Na} = \text{K}$

PT0076

63. Finding size of an atom (isolated) is a lot more complicated due to :-

- (1) Isolation of single atom is complicated
- (2) the electron cloud surrounding the atom does not have a sharp boundary.
- (3) Both
- (4) Isolated atom does not exist

PT0246

64. The incorrect match is :

Element	Standard Radius
(A) Metal	Covalent radii
(B) Non metal	Covalent radii
(C) Metal	Metallic radius
(D) Noble gases	Vander Waal radii
(1) A	(2) B
(3) C	(4) D

PT0247

65. Radii of Noble gases should be compared with which radii of the other elements :

- (1) covalent radii
- (2) metallic radii
- (3) van der Waal radii
- (4) ionic radii

PT0248

66. Estimation of ionic radii can be done by measuring :-

- (1) their covalent radius
- (2) metallic radius
- (3) distances between cations and anions in ionic crystals.
- (4) radius of neutral atom

PT0249

IONISATION POTENTIAL

67. Correct order of 1st I.P. are :-

- (a) $\text{Li} < \text{B} < \text{Be} < \text{C}$
- (b) $\text{O} < \text{N} < \text{F}$
- (c) $\text{Be} < \text{N} < \text{Ne}$

- (1) a, b
- (2) b, c
- (3) a, c
- (4) a, b, c

PT0078

68. The ionisation potential of isotopes of an element will be :-

- (1) Same
- (2) Different
- (3) Depends on atomic masses
- (4) Depends on number of neutrons

PT0079

69. The second ionisation potentials in electron volts of oxygen and fluorine atoms are respectively given by :-

- (1) 35.1, 38.3
- (2) 38.3, 38.3
- (3) 38.3, 35.1
- (4) 35.1, 35.1

PT0080

70. A sudden large jump between the values of 2nd and 3rd IP of an element would be associated with the electronic configuration :-

- (1) $1s^2, 2s^2 2p^6, 3s^1$
- (2) $1s^2, 2s^2 2p^6, 3s^2 3p^5$
- (3) $1s^2, 2s^2 2p^6, 3s^2 3p^2$
- (4) $1s^2, 2s^2 2p^6 3s^2$

PT0081

71. Compared to the first ionisation potential, the value of second ionisation potential of an element is :-

- (1) Negligible
- (2) Smaller
- (3) Greater
- (4) Double

PT0082

72. In which of the following pairs, the ionisation energy of the first species is less than that of the second :-

- (1) $\text{O}^-, \text{O}^{2-}$
- (2) S, P
- (3) N, P
- (4) Be^+, Be

PT0083

73. The correct order of stability of Al^+ , Al^{+2} , Al^{+3} is :-

- (1) $\text{Al}^{+3} > \text{Al}^{+2} > \text{Al}^+$
- (2) $\text{Al}^{+2} > \text{Al}^{+3} > \text{Al}^+$
- (3) $\text{Al}^{+2} < \text{Al}^+ > \text{Al}^{+3}$
- (4) $\text{Al}^{+3} > \text{Al}^+ > \text{Al}^{+2}$

PT0084

74. Least ionisation potential will be of :-

- (1) Be^{3+} (2) H (3) Li^{+2} (4) He^{+}

PT0085

75. Ionisation energy increases in the order :-

- (1) Be, B, C, N (2) B, Be, C, N
(3) C, N, Be, B (4) N, C, Be, B

PT0086

76. Mg forms Mg(II) because of :-

- (1) The oxidation state of Mg is + 2
(2) Difference between I.P_1 and I.P_2 is greater than 16.0 eV
(3) There is only one electron in the outermost energy level of Mg
(4) Difference between I.P_1 and I.P_2 is less than 11 eV

PT0087

77. Minimum first ionisation energy is shown by which electronic configuration:-

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

PT0088

78. With reference to ionisation potential which one of the following set is correct :-

- (1) $\text{Li} > \text{K} > \text{B}$ (2) $\text{B} > \text{Li} > \text{K}$
(3) $\text{Cs} > \text{Li} > \text{K}$ (4) $\text{Cs} < \text{Li} < \text{K}$

PT0089

79. Successive ionisation energies of an element 'X' are given below (in Kcal)

IP_1	IP_2	IP_3	IP_4
165	195	556	595

Electronic configuration of the element 'X' is:-

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

PT0090

80. Second IP of which of the element is maximum-

- (1) Lithium (2) Oxygen
(3) Nitrogen (4) Fluorine

PT0091

81. The energy needed to remove one electron from unipositive ion is abbreviated as :-

- (1) 1st I.P. (2) 3rd I.P.
(3) 2nd I.P. (4) 1st E.A.

PT0092

82. Among the following elements (Whose electronic configuration is given below) the one having the highest ionisation energy is

- (1) $[\text{Ne}] 3s^2 3p^3$ (2) $[\text{Ne}] 3s^2 3p^4$
(3) $[\text{Ne}] 3s^2 3p^5$ (4) $[\text{Ar}] 3d^{10} 4s^2 4p^2$

PT0093

83. The correct order of decreasing first ionisation energy is :-

- (1) $\text{Si} > \text{Al} > \text{Mg} > \text{Na}$ (2) $\text{Si} > \text{Mg} > \text{Al} > \text{Na}$
(3) $\text{Al} > \text{Si} > \text{Mg} > \text{Na}$ (4) $\text{Mg} > \text{Li} > \text{Al} > \text{Si}$

PT0094

84. Out of Na^+ , Mg^{+2} , O^{-2} and N^{-3} , the pair of species showing minimum and maximum IP would be.

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

PT0095

85. Lowest IP will be shown by the element having the configuration :-

- (1) $[\text{He}] 2s^2$ (2) $1s^2$
(3) $[\text{He}] 2s^2 2p^2$ (4) $[\text{He}] 2s^2 2p^5$

PT0097

86. Which ionisation potential (IP) in the following equations involves the greatest amount of energy:-

- (1) $\text{K}^+ \rightarrow \text{K}^{+2} + e^-$ (2) $\text{Li}^+ \rightarrow \text{Li}^{+2} + e^-$
(3) $\text{Fe} \rightarrow \text{Fe}^+ + e^-$ (4) $\text{Ca}^+ \rightarrow \text{Ca}^{+2} + e^-$

PT0099

87. (a) $\text{M}_{(g)}^- \rightarrow \text{M}_{(g)}$ (b) $\text{M}_{(g)} \rightarrow \text{M}_{(g)}^+$
(c) $\text{M}_{(g)}^+ \rightarrow \text{M}_{(g)}^{+2}$ (d) $\text{M}_{(g)}^{+2} \rightarrow \text{M}_{(g)}^{+3}$

Minimum and maximum I.P. would be of :-

- (1) a, d (2) b, c
(3) c, d (4) d, a

PT0101

88. Triad - I $[\text{N}^{3-}, \text{O}^{-2}, \text{Na}^+]$

Triad - II $[\text{N}^+, \text{C}^+, \text{O}^+]$

Choose the species of lowest IP from triad-I and highest IP from triad-II respectively

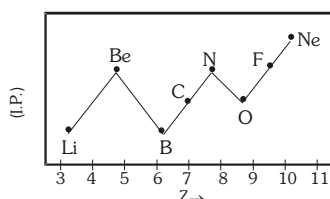
- (1) N^{3-} , O^+ (2) Na^+ , C^+
(3) N^{3-} , N^+ (4) O^- , C^+

PT0103

89. The correct values of ionisation energies (in kJ mol⁻¹) of Be, Ne, He and N respectively are
 (1) 786, 1012, 999, 1256
 (2) 1012, 786, 999, 1256
 (3) 786, 1012, 1256, 999
 (4) 786, 999, 1012, 1256

PT0104

90. Following graph shows variation of I.P. with atomic number in second period (Li – Ne). Value of I.P. of Na (11) will be :-



- (1) Above Ne
 (2) Below Ne but above O
 (3) Below Li
 (4) Between N and O

PT0105

91. Consider the following ionisation reactions
 $A(g) \longrightarrow A^+(g) + e^-$ IE in (KJ/mol) is A_1
 $A^+(g) \longrightarrow A^{2+}(g) + e^-$ IE in (KJ/mol) is A_2
 $A^{2+}(g) \longrightarrow A^{3+}(g) + e^-$ IE in (KJ/mol) is A_3
 then correct order of IE is :-
 (1) $A_1 > A_2 > A_3$ (2) $A_1 = A_2 = A_3$
 (3) $A_1 < A_2 < A_3$ (4) $A_3 = A_2 < A_1$

PT0108

92. IE_1 , IE_2 and IE_3 of an element are 10 eV, 15 eV, 45 eV respectively, the most stable oxidation state of the element will be :-
 (1) + 1 (2) + 2 (3) + 3 (4) + 4

PT0109

93. Select the correct order of I.E. :-
 (1) $Cl^- > Cl > Cl^+$ (2) $Cl^+ > Cl > Cl^-$
 (3) $Cl > Cl^+ > Cl^-$ (4) $Cl^- > Cl^+ > Cl$

PT0110

94. Incorrect statement is :
 (1) The equation of 2nd IP is $X(g) \rightarrow X^{2+}(g) + 2e^-$
 (2) 2nd IP of an element lower than its 3rd IP
 (3) Ionisation energy is expressed in units of kJ/mole
 (4) Ionisation enthalpies are always positive for a neutral atom.

PT0250

95. In the curve of IP vs atomic no. (Z) :
 (1) maxima would be for halogens.
 (2) maxima would be for inert gases.
 (3) minima would be for alkali metals.
 (4) (2) and (3) both

PT0251

96. Choose correct statement :
 (i) IP does not depend upon electron - electron repulsion.
 (ii) IP is affected by the attraction of electron towards nucleus.
 (iii) The Z_{eff} will always less than nuclear charge for much electron species.
 (iv) Generally, shielding is much more effective when orbitals in inner shell are partially filled.
 (1) i, ii (2) ii, iii
 (3) ii, iii, iv (4) ii, iv

PT0252

97. IP of B is slightly less than Be because :
 (1) B has less Z_{eff} than Be
 (2) B has more size than that of Be
 (3) 2p-electron of boron is more shielded from the nucleus by inner core of electron than the 2s-electrons of Be.
 (4) Be has more stable configuration than B so it has more IP.

PT0253

98. The IP of oxygen is less than nitrogen. Reason is :
 (1) electronegativity of oxygen is more than nitrogen
 (2) It is easier to remove the fourth 2p electron from oxygen due to increased electron-electron repulsion.
 (3) Z_{eff} of nitrogen is more
 (4) Oxygen has more stable electronic configuration

PT0254

ELECTRON AFFINITY

99. In the process $Cl(g) + e^- \xrightarrow{\Delta H} Cl^-(g)$, ΔH is
 (1) Positive (2) Negative
 (3) Zero (4) None

PT0111

100. Process in which maximum energy is released:-
 (1) $O \rightarrow O^{-2}$ (2) $Mg^+ \rightarrow Mg^{+2}$
 (3) $Cl \rightarrow Cl^-$ (4) $F \rightarrow F^-$

PT0112

101. Which of the following is energy releasing process

- (1) $\text{Cl}^- \rightarrow \text{Cl(g)} + e^-$ (2) $\text{O}^-(\text{g}) + e^- \rightarrow \text{O}^{2-}(\text{g})$
 (3) $\text{O(g)} \rightarrow \text{O}^+(\text{g}) + e^-$ (4) $\text{O(g)} + e^- \rightarrow \text{O}^-(\text{g})$

PT0113

102. In which of the following process energy is liberated:-

- (1) $\text{Cl} \rightarrow \text{Cl}^+ + e^-$ (2) $\text{HCl} \rightarrow \text{H}^+ + \text{Cl}^-$
 (3) $\text{Cl} + e^- \rightarrow \text{Cl}^-$ (4) $\text{O}^- + e^- \rightarrow \text{O}^{2-}$

PT0114

103. Element of which atomic number has highest electron affinity:-

- (1) 35 (2) 17 (3) 9 (4) 53

PT0115

104. The electron affinity

- (1) Of carbon is greater than oxygen
 (2) Of fluorine is less than iodine
 (3) Of fluorine is less than chlorine
 (4) Of sulphur is less than oxygen

PT0116

105. Energy absorbed in second electron addition in an atom is called.

- (1) 1st IP (2) 2nd EA
 (3) 1st EA (4) 2nd IP

PT0118

106. Which of the following electronic configuration is expected to have highest electron affinity:-

- (1) $2s^2 2p^0$ (2) $2s^2 2p^2$
 (3) $2s^2 2p^3$ (4) $2s^2 2p^1$

PT0120

107. In which of the following process, least energy is required :-

- (1) $\text{F}^-(\text{g}) \longrightarrow \text{F(g)} + e^-$
 (2) $\text{P}^-(\text{g}) \longrightarrow \text{P(g)} + e^-$
 (3) $\text{S}^-(\text{g}) \longrightarrow \text{S(g)} + e^-$
 (4) $\text{Cl}^-(\text{g}) \longrightarrow \text{Cl(g)} + e^-$

PT0122

108. Which of the following pairs will have the most and least electron affinity respectively

- (1) F, Cl (2) Cl, F (3) Cl, S (4) Cl, P

PT0255

109. In Group 16 elements, minimum ΔH_{eg} observed (with negative sign) for -

- (1) Oxygen (2) Sulphur
 (3) Selenium (4) Tellurium

PT0256

110. Select the correct statement regarding electron affinity-

- (1) Electron affinity of F atom is less than that of Cl atom
 (2) In 3rd period, electron-electron repulsion is much less than 2nd period
 (3) Electron affinity depends on stability of configuration
 (4) All of these

PT0257

111. (i) Process of adding electron to an atom may be exothermic or endothermic.

(ii) In most of the elements energy is released when an electron is added to the atom.

(iii) Halogens have maximum ΔH_{eg} in their respective period because of their stable electronic configuration.

(iv) Electron affinity order $\text{S} < \text{O}$

(v) ΔH_{eg} is maximum positive for inert gases in their respective period

Select the correct code in terms of true (T) and false (F)

- (1) T F F T F (2) F T T F T
 (3) T T F F T (4) F F F T F

PT0258

112. The electron gain enthalpy of S or Cl is more negative than that of preceding element because:

(1) the added electron goes to the smaller $n = 2$ and suffers significant repulsion from other electron present in this level.

(2) The added electron goes to $n = 3$ and occupies a larger region of space and electron-electron repulsion is much less.

(3) They show higher Z_{eff}

(4) They are having greater atomic radii.

PT0259

ELECTRONEGATIVITY

113. The correct set of decreasing order of electronegativity is :-

- (1) Li, H, Na (2) Na, H, Li
 (3) H, Li, Na (4) Li, Na, H

PT0123

114. Polarity of a bond can be explained by :-

- (1) Electron affinity (2) Ionisation potential
 (3) Electronegativity (4) All of the above

PT0124

115. Electronegativity values for elements are useful in predicting :-

- (1) Bond energy of a molecule
- (2) Polarity of a bond
- (3) Nature of an oxide
- (4) All

PT0125

116. Mulliken scale of electronegativity uses the concept of :-

- (1) E. A. and EN of Pauling
- (2) E. A. and atomic size
- (3) E.A. and I.P.
- (4) E.A. and bond energy

PT0126

117. The pair with minimum difference in electronegativity is :-

- | | |
|-----------|------------|
| (1) F, Cl | (2) C, H |
| (3) P, H | (4) Na, Cs |

PT0127

118. Least electronegative element is :-

- | | | | |
|-------|--------|-------|--------|
| (1) I | (2) Br | (3) C | (4) Cs |
|-------|--------|-------|--------|

PT0128

119. The nomenclature of ICl is iodine chloride because

- (1) Size of I < Size of Cl
- (2) Atomic number of I > Atomic number of Cl
- (3) E.N. of I < E.N. of Cl
- (4) E. A. of I < E. A. of Cl

PT0130

120. Among the following least and most polar bonds are respectively :-

- | | |
|-------------|-------------|
| (a) C – I | (b) N – O |
| (c) C – F | (d) P – F |
| (1) d and c | (2) a and d |
| (3) b and d | (4) b and c |

PT0131

121. Electronegativity of an element can be measured using :-

- | | |
|---------------------|----------------------|
| (1) Pauling's scale | (2) Mulliken's scale |
| (3) Both | (4) None |

PT0134

122. As we proceed across the period in periodic table, we find there is a decrease in :-

- (1) Ionisation energy
- (2) Electron affinity
- (3) Electronegativity
- (4) Atomic radii

PT0135

123. The electronegativities of the following elements: H, O, F, S and Cl increase in the order :-

- (1) $H < O < F < S < Cl$
- (2) $Cl < H < O < F < S$
- (3) $H < S < O < Cl < F$
- (4) $H < S < Cl < O < F$

PT0137

124. Which of the following is different from other three oxides :-

- | | |
|---------|---------|
| (1) MgO | (2) SnO |
| (3) PbO | (4) ZnO |

PT0138

125. Out of C, Si, Ge, Sn and Pb are metallic

- | | |
|----------------|------------|
| (1) Ge, Sn, Pb | (2) Sn, Pb |
| (3) Ge, Pb | (4) Ge, Sn |

PT0260

126. The correct increasing order of metallic character of Si, Be, Mg, Na, P is

- (1) $P < Si < Be < Mg < Na$
- (2) $Si < P < Be < Na < Mg$
- (3) $Na < Mg < Be < Si < P$
- (4) $Mg < Na < P < Si < Be$

PT0261

127. The radius of which ion is closest to Li^+ ion ?

- | | | | |
|------------|---------------|---------------|---------------|
| (1) Na^+ | (2) Be^{2+} | (3) Mg^{2+} | (4) Al^{+3} |
|------------|---------------|---------------|---------------|

PT0262

128. The correct order of Electronegativity of underlined element.

- | | |
|-----------------------|--------------------|
| (1) $C_2H_4 < C_2H_2$ | (2) $OF_2 < Na_2O$ |
| (3) $HCl < H_2$ | (4) $H_2 < NaH$ |

PT0263

129. Which of the following have no acidic or basic properties :-

- | | | | |
|--------|------------|--------|---------|
| (1) CO | (2) N_2O | (3) NO | (4) All |
|--------|------------|--------|---------|

PT0264

130. Which of the following does not act as an amphoteric oxide ?

- (1) Al_2O_3 (2) ZnO (3) BeO (4) NO

PT0265

131. The anomalous behaviour of 2nd period elements from rest of the members of their respective families is due to :-

- (1) small size
(2) large charge/radius ratio
(3) higher ionic potential
(4) All

PT0266

132. Select the correct statement :-

- (1) Cl_2O_7 is the acidic oxide
(2) Non-metallic character decreases in a period
(3) BeO is a basic oxide
(4) All are correct

PT0267

EXERCISE-I (Conceptual Questions)

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	3	1	1	2	2	4	2	4	3	2	3	2	1	2
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	1	3	2	3	1	3	1	3	1	2	3	3	2	2	1
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	3	2	2	3	2	4	2	2	1	4	1	3	3	1	2
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	3	4	1	1	2	2	4	4	4	4	3	1	3	1	3
Que.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	2	4	3	1	3	3	4	1	3	4	3	2	4	2	2
Que.	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Ans.	4	3	2	4	1	3	3	2	3	1	2	1	1	3	3
Que.	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Ans.	3	2	2	1	4	2	3	2	2	3	4	3	2	3	2
Que.	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Ans.	2	2	4	1	4	3	2	3	3	4	3	3	4	3	2
Que.	121	122	123	124	125	126	127	128	129	130	131	132			
Ans.	3	4	4	1	2	1	3	1	4	4	4	1			

EXERCISE-II (Previous Year Questions)
AIPMT/NEET
AIPMT 2006

1. Which of the following is the most basic oxide?

(1) SeO_2 (2) Al_2O_3
(3) Sb_2O_3 (4) Bi_2O_3

PT0139
AIPMT 2007

2. Identify the correct order of the size of the following

(1) $\text{Ca}^{2+} < \text{K}^+ < \text{Ar} < \text{Cl}^- < \text{S}^{2-}$
(2) $\text{Ar} < \text{Ca}^{2+} < \text{K}^+ < \text{Cl}^- < \text{S}^{2-}$
(3) $\text{Ca}^{2+} < \text{Ar} < \text{K}^+ < \text{Cl}^- < \text{S}^{2-}$
(4) $\text{Ca}^{2+} < \text{K}^+ < \text{Ar} < \text{S}^{2-} < \text{Cl}^-$

PT0140
AIPMT 2008

3. The correct order of decreasing second ionisation enthalpy of Ti(22), V(23), Cr(24) and Mn(25) is :

(1) $\text{Mn} > \text{Cr} > \text{Ti} > \text{V}$
(2) $\text{Ti} > \text{V} > \text{Cr} > \text{Mn}$
(3) $\text{Cr} > \text{Mn} > \text{V} > \text{Ti}$
(4) $\text{V} > \text{Mn} > \text{Cr} > \text{Ti}$

PT0141
AIPMT 2009

4. Which of the following oxides is not expected to react with sodium hydroxide ?

(1) BeO (2) B_2O_3
(3) CaO (4) SiO_2

PT0142

5. Amongst the elements with following electronic configurations, which one of them may have the highest ionization energy ?

(1) $[\text{Ne}]3s^23p^1$ (2) $[\text{Ne}]3s^23p^3$
(3) $[\text{Ne}]3s^23p^2$ (4) $[\text{Ar}]3d^{10}4s^24p^3$

PT0143
AIPMT 2010

6. Among the elements Ca, Mg, P and Cl, the order of increasing atomic radii is :-

(1) $\text{Cl} < \text{P} < \text{Mg} < \text{Ca}$
(2) $\text{P} < \text{Cl} < \text{Ca} < \text{Mg}$
(3) $\text{Ca} < \text{Mg} < \text{P} < \text{Cl}$
(4) $\text{Mg} < \text{Ca} < \text{Cl} < \text{P}$

PT0144

7. The correct order of the decreasing ionic radii among the following isoelectronic species is :-

(1) $\text{K}^+ > \text{Ca}^{2+} > \text{Cl}^- > \text{S}^{2-}$
(2) $\text{Ca}^{2+} > \text{K}^+ > \text{S}^{2-} > \text{Cl}^-$
(3) $\text{Cl}^- > \text{S}^{2-} > \text{Ca}^{2+} > \text{K}^+$
(4) $\text{S}^{2-} > \text{Cl}^- > \text{K}^+ > \text{Ca}^{2+}$

PT0145

8. Which of the following represents the correct order of increasing electron gain enthalpy with negative sign for the elements O, S, F and Cl ?

(1) $\text{S} < \text{O} < \text{Cl} < \text{F}$
(2) $\text{Cl} < \text{F} < \text{O} < \text{S}$
(3) $\text{O} < \text{S} < \text{F} < \text{Cl}$
(4) $\text{F} < \text{S} < \text{O} < \text{Cl}$

PT0146
AIPMT Mains-2011

9. What is the value of electron gain enthalpy of Na^+ if IE_1 of Na = 5.1 eV :-

(1) +0.2 eV (2) -5.1 eV
(3) -10.2 eV (4) +2.55 eV

PT0148
AIPMT Pre.-2012

10. Identify the **wrong** statement in the following:

(1) Atomic radius of the elements increases as one moves down the first group of the periodic table
(2) Atomic radius of the elements decreases as one moves from left to right in the 2nd period of the periodic table
(3) Amongst isoelectronic species, smaller the positive charge on the cation, smaller is the ionic radius
(4) Amongst isoelectronic species, greater the negative charge on the anion, larger is the ionic radius

PT0149
AIPMT 2014

11. Which of the following orders of ionic radii is correctly represented ?

(1) $\text{H}^- > \text{H}^+ > \text{H}$
(2) $\text{Na}^+ < \text{F}^- < \text{O}^{2-}$
(3) $\text{F}^- > \text{O}^{2-} > \text{Na}^+$
(4) $\text{Al}^{3+} > \text{Mg}^{2+} > \text{N}^{3-}$

PT0151

12. Be^{2+} is isoelectronic with which of the following ions?

- (1) H^+ (2) Li^+
(3) Na^+ (4) Mg^{2+}

PT0152

13. Acidity of diprotic acids in aqueous solutions increases in the order :-

- (1) $\text{H}_2\text{S} < \text{H}_2\text{Se} < \text{H}_2\text{Te}$
(2) $\text{H}_2\text{Se} < \text{H}_2\text{S} < \text{H}_2\text{Te}$
(3) $\text{H}_2\text{Te} < \text{H}_2\text{S} < \text{H}_2\text{Se}$
(4) $\text{H}_2\text{Se} < \text{H}_2\text{Te} < \text{H}_2\text{S}$

PT0153

14. Reason of lanthanoid contraction is :-

- (1) Negligible screening effect of 'f' orbitals
(2) Increasing nuclear charge
(3) Decreasing nuclear charge
(4) Decreasing screening effect

PT0154

AIPMT 2015

15. The species Ar , K^+ and Ca^{2+} contain the same number of electrons. In which order do their radii increase ?

- (1) $\text{Ca}^{2+} < \text{Ar} < \text{K}^+$
(2) $\text{Ca}^{2+} < \text{K}^+ < \text{Ar}$
(3) $\text{K}^+ < \text{Ar} < \text{Ca}^{2+}$
(4) $\text{Ar} < \text{K}^+ < \text{Ca}^{2+}$

PT0157

16. The number of d-electrons in Fe^{2+} ($Z = 26$) is not equal to the number of electrons in which one of the following?

- (1) p-electrons in Cl ($Z = 17$)
(2) d-electrons in Fe ($Z = 26$)
(3) p-electrons in Ne ($Z = 10$)
(4) s-electrons in Mg ($Z = 12$)

PT0158

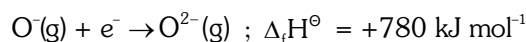
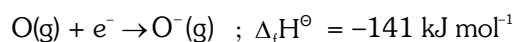
17. Because of lanthanoid contraction, which of the following pairs of elements have nearly same atomic radii ? (Numbers in the brackets are atomic numbers).

- (1) Zr (40) and Nb (41)
(2) Zr (40) and Hf (72)
(3) Zr (40) and Ta (73)
(4) Ti (22) and Zr (40)

PT0159

Re-AIPMT 2015

18. The formation of the oxide ion, $\text{O}^{2-}(\text{g})$, from oxygen atom requires first an exothermic and then an endothermic step as shown below :



Thus process of formation of O^{2-} in gas phase is unfavourable even though O^{2-} is isoelectronic with neon. It is due to the fact that,

- (1) Oxygen is more electronegative
(2) Addition of electron in oxygen results in larger size of the ion
(3) Electron repulsion outweighs the stability gained by achieving noble gas configuration
(4) O^- ion has comparatively smaller size than oxygen atom

PT0160

19. Which is the correct order of increasing energy of the listed orbitals in the atom of titanium ?

(At. no. $Z = 22$)

- (1) $3s \ 3p \ 3d \ 4s$ (2) $3s \ 3p \ 4s \ 3d$
(3) $3s \ 4s \ 3p \ 3d$ (4) $4s \ 3s \ 3p \ 3d$

PT0161

NEET-I 2016

20. In which of the following options the order of arrangement does not agree with the variation of property indicated against it ?

- (1) $\text{Al}^{3+} < \text{Mg}^{2+} < \text{Na}^+ < \text{F}^-$ (increasing ionic size)
(2) $\text{B} < \text{C} < \text{N} < \text{O}$ (increasing first ionisation enthalpy)
(3) $\text{I} < \text{Br} < \text{Cl} < \text{F}$ (increasing electron gain enthalpy)
(4) $\text{Li} < \text{Na} < \text{K} < \text{Rb}$ (increasing metallic radius)

PT0164

NEET(UG) 2017

21. The element $Z = 114$ has been discovered recently. It will belong to which of the following family/group and electronic configuration ?

- (1) Carbon family, $[\text{Rn}] 5f^{14} 6d^{10} 7s^2 7p^2$
(2) Oxygen family, $[\text{Rn}] 5f^{14} 6d^{10} 7s^2 7p^4$
(3) Nitrogen family, $[\text{Rn}] 5f^{14} 6d^{10} 7s^2 7p^6$
(4) Halogen family, $[\text{Rn}] 5f^{14} 6d^{10} 7s^2 7p^5$

PT0166

NEET(UG) 2018

22. Which of the following oxides is most acidic in nature ?

(1) MgO (2) BeO (3) BaO (4) CaO

PT0169

23. The correct order of atomic radii in group 13 elements is

(1) B < Al < In < Ga < Tl
(2) B < Al < Ga < In < Tl
(3) B < Ga < Al < Tl < In
(4) B < Ga < Al < In < Tl

PT0170

NEET(UG) 2019

24. Which of the following is an amphoteric hydroxide?

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

PT0268

25. For the second period elements the correct increasing order of first ionisation enthalpy is :-

(1) Li < Be < B < C < N < O < F < Ne
(2) Li < B < Be < C < O < N < F < Ne
(3) Li < B < Be < C < N < O < F < Ne
(4) Li < Be < B < C < O < N < F < Ne

PT0269

26. 4d, 5p, 5f and 6p orbitals are arranged in the order of decreasing energy. The correct option is :-

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

PT0270

NEET(UG) 2019 (ODISHA)

27. Match the oxide given in column A with its property given in column B:

Column-A	Column-B
(i) Na ₂ O	(a) Neutral
(ii) Al ₂ O ₃	(b) Basic
(iii) N ₂ O	(c) Acidic
(iv) Cl ₂ O ₇	(d) Amphoteric

Which of the following options has all correct pairs?

(1) (i)-(b), (ii)-(a), (iii)-(d), (iv)-(c)
(2) (i)-(c), (ii)-(b), (iii)-(a), (iv)-(d)
(3) (i)-(a), (ii)-(d), (iii)-(b), (iv)-(c)
(4) (i)-(b), (ii)-(d), (iii)-(a), (iv)-(c)

PT0271

NEET(UG) 2020

28. Identify the incorrect match :

Name	IUPAC Official Name
(a) Unnilunium	(i) Mendelevium
(b) Unniltrium	(ii) Lawrencium
(c) Unnilhexium	(iii) Seaborgium
(d) Unununnium	(iv) Darmstadtium
(1) (d), (iv)	(2) (a), (i)
(3) (b), (ii)	(4) (c), (iii)

PT0334

29. Match the following :

Oxide	Nature
(a) CO	(i) Basic
(b) BaO	(ii) Neutral
(c) Al ₂ O ₃	(iii) Acidic
(d) Cl ₂ O ₇	(iv) Amphoteric

Which of the following is correct option?

(a)	(b)	(c)	(d)
(1) (iv)	(iii)	(ii)	(i)
(2) (i)	(ii)	(iii)	(iv)
(3) (ii)	(i)	(iv)	(iii)
(4) (iii)	(iv)	(i)	(ii)

PT0335

NEET(UG) 2020(COVID-19)

30. Match the element in column I with that in column II.

Column-I	Column-II
(a) Copper	(i) Non-metal
(b) Fluorine	(ii) Transition metal
(c) Silicon	(iii) Lanthanoid
(d) Cerium	(iv) Metalloid

Identify the correct match :

(1) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)
(2) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)
(3) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)
(4) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

PT0336

31. Identify the **incorrect** statement from the following:

- (1) Zirconium and Hafnium have identical radii of 160 pm and 159 pm, respectively as a consequence of lanthanoid contraction.
- (2) Lanthanoids reveal only +3 oxidation state.
- (3) The lanthanoid ions other than the f^0 type and the f^{14} type are all paramagnetic.
- (4) The overall decrease in atomic and ionic radii from lanthanum to lutetium is called lanthanoid contraction.

PT0337

32. Which of the following oxide is amphoteric in nature?

- | | |
|--------------------|--------------------|
| (1) SnO_2 | (2) SiO_2 |
| (3) GeO_2 | (4) CO_2 |

PT0338

NEET(UG) 2021

33. **Statement I :**

Acid strength increases in the order given as $\text{HF} \ll \text{HCl} \ll \text{HBr} \ll \text{HI}$.

Statement II :

As the size of the elements F, Cl, Br, I increases down the group, the bond strength of HF, HCl, HBr and HI decreases and so the acid strength increases.

In the light of the above statements, choose the **correct** answer from the options given below.

- (1) Both **Statement I** and **Statement II** are true.
- (2) Both **Statement I** and **Statement II** are false.
- (3) **Statement I** is correct but **Statement II** is false.
- (4) **Statement I** is incorrect but **Statement II** is true.

PT0339

NEET(UG) 2022

34. The IUPAC name of an element with atomic number 119 is

- (1) unnilennium
- (2) unununnium
- (3) ununoctium
- (4) ununennium

PT0344

NEET(UG) 2022 (OVERSEAS)

35. Match **List-I** with **List-II** :

List-I	List-II
Elements	Atomic radii (pm)
(a) O	(i) 88
(b) C	(ii) 74
(c) B	(iii) 66
(d) N	(iv) 77

Choose the **correct answer** from the options given below :

- (1) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)
- (2) (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)
- (3) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
- (4) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

PT0345

Re-NEET(UG) 2022

36. If first ionization enthalpies of element X and Y are 419 kJ mol^{-1} and 590 kJ mol^{-1} , respectively and second ionization enthalpies of X and Y are 3069 kJ mol^{-1} and 1145 kJ mol^{-1} , respectively.

Then **correct** statement is :-

- (1) X is an alkali metal and Y is an alkaline earth metal.
- (2) X is an alkaline earth metal and Y is an alkali metal.
- (3) Both X and Y are alkali metals.
- (4) Both X and Y are alkaline earth metals.

PT0346

37. The correct order of first ionization enthalpy for the given four element is :

- (1) $\text{C} < \text{N} < \text{F} < \text{O}$
- (2) $\text{C} < \text{N} < \text{O} < \text{F}$
- (3) $\text{C} < \text{O} < \text{N} < \text{F}$
- (4) $\text{C} < \text{F} < \text{N} < \text{O}$

PT0347

38. Decrease in size from left to right in actinoid series is greater and gradual than that in lanthanoid series due to :

- (1) 4 f orbitals are penultimate
- (2) 4 f orbitals have greater shielding effect
- (3) 5 f orbitals have poor shielding effect
- (4) 5 f orbitals have greater shielding effect

PT0348

EXERCISE-II (Previous Year Questions)
ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	1	3	3	2	1	4	3	2	3	2	2	1	1	2
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	1	2	3	2	2,3	1	2	4	4	2	1	4	1	3	2
Que.	31	32	33	34	35	36	37	38							
Ans.	2	1	1	4	3	1	3	3							

EXERCISE-III (Analytical Questions)

Master Your Understanding

1. Which of the following is correct match :-

	Atomic number	Group number	Period number
(A)	46	10	6
(B)	58	3	6
(C)	56	2	6
(D)	42	6	5

- (1) Only B, C, D (2) Only A, B, C
(3) Only B, C (4) Only A, C, D

PT0172

2. Atomic number of Ag is 47. In the same group the atomic number of elements placed above and below Ag will be :-

- (1) 37, 67 (2) 29, 79 (3) 39, 69 (4) 29, 65

PT0174

3. Which of the following statements is wrong :-

- (1) Vander Waal's radius of iodine is more than its covalent radius
(2) All isoelectronic ions belong to same period of the periodic table
(3) IE_1 of N is higher than that of O while IE_2 of O is higher than that of N
(4) The electron affinity of N is less than that of P

PT0178

4. The inter nuclear distance in H_2 and Cl_2 molecules are 74 and 198 Å. respectively. The bond length of HCl may be

(EN of H = 2.1 Cl = 3.0)

- (1) 136 Å (2) 272 Å
(3) 135.919 Å (4) 271.919 Å

PT0179

5. These are 3 elements A, B and C. Their atomic number are Z_1, Z_2, Z_3 respectively. If $Z_3 - Z_1 = 2$

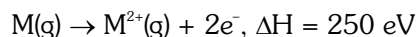
and $\frac{Z_1 + Z_3}{2} = Z_2$ and the electronic configuration

of element C is $[Ar] 3d^2 4s^2$ then correct order of atomic radius is :-

- (1) $A^{+2} < B^{+3} < C^{+4}$ (2) $A^{+2} = B^{+3} = C^{+4}$
(3) $A^{+2} > B^{+3} > C^{+4}$ (4) $B^{+3} < A^{+2} = C^{+4}$

PT0180

6. $M(g) \rightarrow M^+(g) + e^-, \Delta H = 100 \text{ eV}$



Which is incorrect statements :-

- (1) IE_1 of $M(g)$ is 100 eV
(2) IE_2 of $M(g)$ is 150 eV
(3) IE_2 of $M(g)$ is 250 eV
(4) none

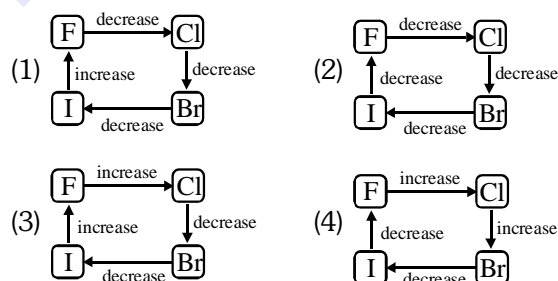
PT0181

7. Successive ionisation energies of an element A are 100 eV, 150 eV, 181 eV, 2000 eV, 2200 eV correct statement regarding A is :-

- (1) Element 'A' may be metal
(2) Formula of oxide of A may be A_2O_3
(3) Oxide of element A may be amphoteric
(4) All are correct

PT0182

8. Which of the following diagrams is correctly related to electron affinity of halogens :-



PT0184

9. Elements of which group form anions most readily:-

- (1) Oxygen family (2) Nitrogen group
(3) Halogens (4) Alkali metals

PT0185

10. Which is the weakest base among NaOH, $Ca(OH)_2$, KOH and $Zn(OH)_2$:-

- (1) NaOH (2) KOH
(3) $Ca(OH)_2$ (4) $Zn(OH)_2$

PT0186

11. Identify the incorrect are :-

- (1) Shielding constant (σ) : $\text{Li} < \text{Na} < \text{K} < \text{Rb}$
- (2) Z_{eff} : $\text{Li} > \text{Na} > \text{K} > \text{Rb}$
- (3) Ionic radius : $\text{O}^{2-} > \text{F}^- > \text{Na}^+ > \text{Mg}^{2+}$
- (4) Atomic size : $\text{Li} < \text{Na} < \text{K} < \text{Rb}$

PT0188

12. If electronegativity values of element X and Y are 3.8 and 1.8 respectively, then percentage of ionic character in compound XY is :

- (1) 50
- (2) 46
- (3) 64
- (4) 36

PT0189

13. The order of ionisation potential between He^+ ion and H-atom (both species are in gaseous state) is:-

- (1) I.P. (He^+) = I.P. (H)
- (2) I.P. (He^+) < I.P. (H)
- (3) I.P. (He^+) > I.P. (H)
- (4) Cannot be compared

PT0191

14. Electronic configuration are :-

- A - $1s^2 2s^2 2p^1$
- B - $1s^2 2s^2 2p^6 3s^1 3p^2$
- C - $1s^2 2s^1 2p^1$
- D - $1s^2 2s^2 2p^5 3s^1$

then which among these will belong to the same group in the periodic table ?

- (1) A & B
- (2) A, B, C
- (3) A, B, D
- (4) A, B, C, D

PT0192

15. The IE_1 & IE_2 of three elements A, B & C are given as (IE in KJ/mol).

	A	B	C
IE_1	400	550	1150
IE_2	2650	1070	2090

Identify the element which represent a non-metal:-

- (1) A
- (2) B
- (3) Both A & B
- (4) C

PT0193

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

- (1) $\text{Al}^{3+} < \text{Mg}^{2+} < \text{Na}^+ < \text{F}^-$ - increasing ionic size
- (2) $\text{B} < \text{C} < \text{N} < \text{O}$ - increasing first ionization energy
- (3) $\text{I} < \text{Br} < \text{F} < \text{Cl}$ - increasing electron gain enthalpy (with negative sign)
- (4) $\text{Li} < \text{Na} < \text{K} < \text{Rb}$ - increasing metallic radius

PT0195

17. Which one of the following orders represents the correct sequence of the increasing basic nature of the given oxides ?

- (1) $\text{Na}_2\text{O} < \text{K}_2\text{O} < \text{MgO} < \text{Al}_2\text{O}_3$
- (2) $\text{K}_2\text{O} < \text{Na}_2\text{O} < \text{Al}_2\text{O}_3 < \text{MgO}$
- (3) $\text{Al}_2\text{O}_3 < \text{MgO} < \text{Na}_2\text{O} < \text{K}_2\text{O}$
- (4) $\text{MgO} < \text{K}_2\text{O} < \text{Al}_2\text{O}_3 < \text{Na}_2\text{O}$

PT0196

18. The outer electron configuration of Gd (Atomic No. : 64) is :-

- (1) $4f^4 5d^4 6s^2$
- (2) $4f^7 5d^1 6s^2$
- (3) $4f^3 5d^5 6s^2$
- (4) $4f^8 5d^0 6s^2$

PT0197

19. 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) $\text{I} > \text{Br} > \text{Cl} > \text{F}$
- (2) $\text{F} > \text{Cl} > \text{Br} > \text{I}$
- (3) $\text{Cl} > \text{F} > \text{Br} > \text{I}$
- (4) $\text{Br} > \text{Cl} > \text{I} > \text{F}$

PT0198

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

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

PT0199

21. For electron affinity of halogens which of the following is correct :-

- (1) $\text{Br} > \text{F}$
- (2) $\text{F} > \text{Cl}$
- (3) $\text{Br} > \text{Cl}$
- (4) $\text{F} > \text{I}$

PT0200

22. The pair of amphoteric hydroxide is

- (1) $\text{Al}(\text{OH})_3$, LiOH
- (2) $\text{Be}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$
- (3) $\text{B}(\text{OH})_3$, $\text{Be}(\text{OH})_2$
- (4) $\text{Be}(\text{OH})_2$, $\text{Zn}(\text{OH})_2$

PT0201

23. Electronegativity is the measurement of capacity of an atom by which :

- (1) Electrons get repelled
- (2) Electrons get attracted
- (3) Gain of electron
- (4) Loose of proton

PT0202

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

- (1) an increase from O^{2-} to F^- and then decrease from Na^+ to Al^{3+}
- (2) a decrease from O^{2-} to F^- and then increase from Na^+ to Al^{3+}
- (3) a significant increase from O^{2-} to Al^{3+}
- (4) a significant decrease from O^{2-} to Al^{3+}

PT0203

25. Ionic radii are :-

- (1) Directly proportional to square of effective nuclear charge
- (2) Inversely proportional to effective nuclear charge
- (3) Inversely proportional to square of effective nuclear charge
- (4) Directly proportional to effective nuclear charge

PT0204

26. Which one of the following arrangements represents the correct order of electron gain enthalpy (with negative sign) of the given atomic species :-

- (1) $F < Cl < O < S$
- (2) $S < O < Cl < F$
- (3) $O < S < F < Cl$
- (4) $Cl < F < S < O$

PT0205

27. Which of the following E.A. order is not correct ?

- (1) $N < O < S$
- (2) $Cl > O > N > C$
- (3) $O < S < F < Cl$
- (4) $B < C < Si < S$

PT0209

28. Which one of the following order of given properties is correct ?

- (1) Atomic radius - $Li < Be < B$
- (2) Ionisation potential - $Li < Be < B$
- (3) Electron affinity - $Li < Be < B$
- (4) Electronegativity - $Li < Be < B$

PT0210**EXERCISE-III (Analytical Questions)****ANSWER KEY**

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	2	2	3	3	3	4	3	3	4	2	2	3	1	4
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28		
Ans.	2	3	2	3	2	4	4	2	4	2	3	2	4		