

PERIODIC PROPERTIES

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
- 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
- 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
- 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
- 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

PERIOD, GROUP AND BLOCK

- 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
- Elements upto atomic no. 112 have been discovered till now. What will be the electronic configuration of the element possessing atomic no. 108 :-
 (1) $[\text{Rn}]5f^{14} 6d^6 7s^2$ (2) $6f^{14} 7d^8 7s^2$
 (3) $[\text{Rn}] 5f^{14} 6d^8 7s^0$ (4) $[\text{Xe}] 4f^{14} 5d^8 6s^2$

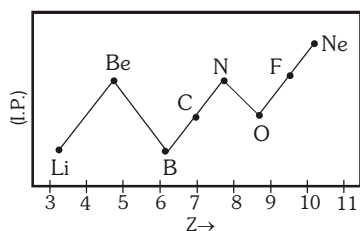
- The IUPAC name of the element which is placed after Db_{105} in the periodic table, will be :-
 (1) Un nil pentium (2) Un un nilium
 (3) Un nil hexium (4) Un nil quadium
- $4d^3 5s^2$ configuration belongs to which group :-
 (1) IIA (2) IIB (3) V B (4) III B
- True statement is :-
 (1) All the transuranic elements are synthetic elements
 (2) Elements of third group are called bridge elements
 (3) Element of $1s^2$ configuration is placed in IIA group
 (4) Electronic configuration of elements of a group is same

Zeff, SCREENING CONSTANT & ATOMIC RADIUS

- 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^-
- 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
- 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 nuclear charge exerts a greater attractive force on the electrons
- Which of the following ion has largest size :-
 (1) F^- (2) Al^{+3} (3) Cs^+ (4) O^{2-}
- 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) $r_{\text{Sc}} > r_{\text{Ti}}$
- The covalent and vander Waal's radii of hydrogen respectively are :-
 (1) 0.37 Å, 0.8 Å (2) 0.37 Å, 0.37 Å
 (3) 0.8 Å, 0.8 Å (4) 0.8 Å, 0.37 Å

IONISATION POTENTIAL

17. 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
18. 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) $\text{Al}^{+3} > \text{Al}^+ > \text{Al}^{+2}$
19. 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) $1s^2 2s^2 2p^6$
20. Second IP of which of the element is maximum-
 (1) Lithium (2) Oxygen
 (3) Nitrogen (4) Fluorine
21. (a) $M_{(g)}^- \rightarrow M_{(g)}$ (b) $M_{(g)} \rightarrow M_{(g)}^+$
 (c) $M_{(g)}^+ \rightarrow M_{(g)}^{+2}$ (d) $M_{(g)}^{+2} \rightarrow M_{(g)}^{+3}$
 Minimum and maximum I.P. would be of :-
 (1) a, d (2) b, c (3) c, d (4) d, a
22. 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
23. Select the correct order of I.E. :-
 (1) $\text{Cl}^- > \text{Cl} > \text{Cl}^+$ (2) $\text{Cl}^+ > \text{Cl} > \text{Cl}^-$
 (3) $\text{Cl} > \text{Cl}^+ > \text{Cl}^-$ (4) $\text{Cl}^- > \text{Cl}^+ > \text{Cl}$

ELECTRON AFFINITY

24. 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) $\text{O}^- + e \rightarrow \text{O}^{2-}$

25. Element of which atomic number has highest electron affinity:-
 (1) 35 (2) 17 (3) 9 (4) 53
26. 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) $2s^2 2p^1$
27. In which of the following process, least energy is required :-
 (1) $\text{F}_{(g)}^- \rightarrow \text{F}_{(g)} + e^-$ (2) $\text{P}_{(g)}^- \rightarrow \text{P}_{(g)} + e^-$
 (3) $\text{S}_{(g)}^- \rightarrow \text{S}_{(g)} + e^-$ (4) $\text{Cl}_{(g)}^- \rightarrow \text{Cl}_{(g)} + e^-$

ELECTRONEGATIVITY

28. 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
29. Least electronegative element is :-
 (1) I (2) Br (3) C (4) Cs
30. If the ionisation potential is IP, electron affinity is EA and electronegativity is X then which of the following relation is correct :-
 (1) $2X - \text{EA} - \text{IP} = 0$ (2) $2\text{EA} - X - \text{IP} = 0$
 (3) $2\text{IP} - X - \text{EA} = 0$ (4) All of the above
31. The properties which are not common to both groups 1 and 17 elements in the periodic table are :-
 (1) Electropositive character increases down the groups
 (2) Reactivity decreases from top to bottom in these groups
 (3) Atomic radii increases as the atomic number increases
 (4) Electronegativity decreases on moving down the group
32. 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
33. The electronegativities of the following elements: H, O, F, S and Cl increase in the order :-
 (1) $\text{H} < \text{O} < \text{F} < \text{S} < \text{Cl}$
 (2) $\text{Cl} < \text{H} < \text{O} < \text{F} < \text{S}$
 (3) $\text{H} < \text{S} < \text{O} < \text{Cl} < \text{F}$
 (4) $\text{H} < \text{S} < \text{Cl} < \text{O} < \text{F}$

ANSWER KEY

PERIODIC PROPERTIES

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

SOLUTION

PERIODIC PROPERTIES

1. Based on atomic masses
3. Eka silicon-Ge
Eka scandium-Y
4. 3rd period contain 8 element
5. In a group valence shell electron configuration is same
6. [Rn] 5f¹⁴ 7s² 6d¹⁰ 7p³
11. N³⁻, have 10e⁻ where as S²⁻ & Cl⁻ has 18e⁻
12. F < Ne (atomic radius)
13. Li < Na = K
15. Cu < Zn (radius)
16. $r_{v.w} > r_{cov}$
17. Number of valence electron =2
18. Al⁺³ having noble gas configurtion
20. For IP₂ electron removed from 1s² of Li
23. Cation > atom > anion (I.E.)
24. Bond polarity $\propto \Delta EN$
25. Cl (at.no.17) has highest e⁻ affinity