

EXERCISE - 1 : BASIC OBJECTIVE QUESTIONS

Dobereiner's Law of Triads

1. Which of the following is not a Dobereiner triad ?
 (a) Cl, Br, I (b) Ca, Sr, Ba
 (c) Li, Na, K (d) Fe, Co, Ni

Modern Periodic Table/General Classification of Elements

2. Elements whose outer electronic configuration vary from ns^2np^1 to ns^2np^6 constitute
 (a) s-Block of elements (b) p-Block of elements
 (c) d-Block of elements (d) f-Block of elements
3. The basis of modern periodic table is
 (a) atomic volume (b) atomic number
 (c) atomic weights (d) atomic size
4. In the fourth period of the periodic table, how many elements have one or more 4d electrons ?
 (a) 2 (b) 18
 (c) 0 (d) 6
5. If the aufbau principle had not been followed, Ca ($Z = 20$) would have been placed in the :
 (a) s-block (b) p-block
 (c) d-block (d) f-block
6. La (lanthanum) having atomic number 57 is a member of :
 (a) s-block elements (b) p-block elements
 (c) d-block elements (d) f-block elements
7. Which of the following pairs has both members from the same group of periodic table
 (a) Mg, Ba (b) Mg, Na
 (c) Mg, Cu (d) Mg, Cl
8. The transition elements have a characteristic electronic configuration which can be represented as:
 (a) $(n - 2) s^2 p^6 d^{1-10} (n - 1) s^2 p^6 ns^2$
 (b) $(n - 2) s^2 p^6 d^{1-10} (n - 1) s^2 p^6 d^{1 \text{ or } 2} ns^1$
 (c) $(n - 1) s^2 p^6 d^{10} ns^2 np^6 nd^{1-10}$
 (d) $(n - 1) s^2 p^6 d^{1-10} ns^{0-2}$
9. The element whose electronic configuration is $1s^2, 2s^2, 2p^6, 3s^2$ is
 (a) metal (b) metalloid
 (c) inert gas (d) non - metal
10. Which of the following pairs do not show diagonal relationship ?
 (a) Li and Mg (b) Be and Al
 (c) B and Si (d) C and S
11. In which of the following pair, both the species are isoelectronic but first one is large in size than the second ?
 (a) S^{2-}, O^{2-} (b) Cl^-, S^{2-}
 (c) F^-, Na^+ (d) N^{3-}, P^{3-}
12. The correct order of ionic size of $N^{3-}, Na^+, F^-, Mg^{2+}$ and O^{2-} is :
 (a) $Mg^{2+} > Na^+ > F^- > O^{2-} < N^{3-}$
 (b) $N^{3-} < F^- > O^{2-} > Na^+ > Mg^{2+}$
 (c) $Mg^{2+} < Na^+ < F^- < O^{2-} < N^{3-}$
 (d) $N^{3-} > O^{2-} > F^- > Na^+ < Mg^{2+}$

Prediction of Period, Group and Block

13. Ce (58) is a member of :
 (a) s - block (b) p - block
 (c) d - block (d) f - block
14. The electronic configuration of an element is $1s^2, 2s^2 2p^6, 3s^2 3p^3$. What is the atomic number of the element which is just below the above element in the periodic table.
 (a) 34 (b) 49
 (c) 33 (d) 31

Atomic Radius

15. Which of the following atom has largest size
 (a) Cs (b) K
 (c) Kr (d) Xe
16. Calculate the bond length of C-C bond if covalent radius of carbon is .77 Å
 (a) .77 Å (b) 1.54 Å
 (c) 1.86 Å (d) 1.29 Å

17. In comparison to the parent atom, the size of the
 (a) Cation is smaller but anion is larger
 (b) Cation is larger but anion is smaller
 (c) Cation and anion are equal in size
 (d) All the three are correct depending upon the atom
18. Which one is the correct order of the size of the iodine species.
 (a) $I > I^+ > I^-$ (b) $I > I^- > I^+$
 (c) $I^+ > I^- > I$ (d) $I^- > I > I^+$
19. Arrange the following elements in the order of increasing atomic size Cl, S, P, Ar
 (a) Ar, Cl, S, P (b) Cl, S, P, Ar
 (c) S, Cl, P, Ar (d) Ar, P, S, Cl
20. Which of the following ions has the smallest radius ?
 (a) Li^+ (b) Na^+
 (c) Be^{2+} (d) K^+
21. In iso – electronic species of Mg^{2+} , N^{3-} , Al^{3+} , the order of decreasing ionic radii will be
 (a) $N^{3-} > Mg^{2+} > Al^{3+}$ (b) $Mg^{2+} > Al^{3+} > N^{3-}$
 (c) $Al^{3+} > N^{3-} > Mg^{2+}$ (d) $Al^{3+} = Mg^{2+} < N^{3-}$
22. When a chlorine atom becomes chloride ion, its size
 (a) remains unaltered (b) increases
 (c) decreases (d) none of these
- Ionization Potential or Ionization Energy**
23. Lowest ionisation potential in periods is shown by :
 (a) inert gases (b) halogens
 (c) alkali metals (d) alkaline earth metals
24. The correct arrangement of the elements in the order of decreasing ionization energies is
 (a) $Na > Mg > Al$ (b) $Mg > Na > Al$
 (c) $Al > Mg > Na$ (d) $Mg > Al > Na$
25. The maximum tendency to form unipositive ion is for the element which has the following electronic configuration :
 (a) $1s^2, 2s^2, 2p^6, 3s^2$ (b) $1s^2, 2s^2, 2p^6, 3s^2, 3p^1$
 (c) $1s^2, 2s^2, 2p^6$ (d) $1s^2, 2s^2, 2p^6, 3s^2, 3p^3$
26. Which element has the highest ionisation energy ?
 (a) Hydrogen (b) Lithium
 (c) Boron (d) Sodium
27. An element will have lowest ionisation potential when its electronic configuration is
 (a) $1s^1$ (b) $1s^2, 2s^2, 2p^2$
 (c) $1s^2, 2s^2, 2p^5$ (d) $1s^2, 2s^2, 2p^6, 3s^1$
28. Which of the following iso – electronic ions has the lowest ionisation energy ?
 (a) K^+ (b) Ca^{2+}
 (c) Cl^{-1} (d) S^{2-}
29. The correct order of increasing ionisation potentials of K^+ , Ar, Cl^- is
 (a) $K^+ < Ar < Cl^-$ (b) $Cl^- < K^+ < Ar$
 (c) $Cl^- < Ar < K^+$ (d) $Ar < Cl^- < K^+$
30. The first, second and third ionisation energies (E_1 , E_2 & E_3) for an element are 7 eV, 12.5 eV and 42.5 eV respectively. The most stable oxidation state of the element will be :
 (a) +1 (b) +4
 (c) +3 (d) +2
31. The order of ionisation potential between He^+ ion and H-atom (both species are in gaseous state) is :
 (a) I.P. (He^+) = I.P. (H) (b) I.P. (He^+) < I.P. (H)
 (c) I.P. (He^+) > I.P. (H) (d) cannot be compared
32. The first four I.E. values of an element are 284, 412, 656 and 3210 kJ mol⁻¹. The number of valence electrons in the element are :
 (a) one (b) two
 (c) three (d) four
33. The correct order of second I.E. of C, N, O and F are in the order :
 (a) $F > O > N > C$ (b) $C > N > O > F$
 (c) $O > N > F > C$ (d) $O > F > N > C$
34. The element which has highest first ionization energy in the periodic table is
 (a) H (b) Rn
 (c) F (d) He
35. Correct order of first ionization potential among the following elements Be, B, C, N, O is
 (a) $B < Be < C < O < N$ (b) $B < Be < C < N < O$
 (c) $Be < B < C < N < O$ (d) $Be < B < C < O < N$

ANSWER KEY**Exercise - 1 : (Basic Objective Questions)**

1. (d)	11	2. (b)	3. (b)	4. (c)	5. (c)	6. (c)	7. (a)	8. (d)	9. (a)	10. (d)
. (c)	21.	12. (c)	13. (d)	14. (c)	15. (a)	16. (b)	17. (a)	18. (d)	19. (b)	20. (c)
(a)	31.	22. (b)	23. (c)	24. (d)	25. (b)	26. (a)	27. (d)	28. (d)	29. (c)	30. (d)
(c)	41.	32. (c)	33. (d)	34. (d)	35. (a)					