Classification of Elements and Periodicity in Properties

Q.1. In which of the following arrangements, the order is NOT according to the property indicated against it?

a) Li < Na < K < Rb : Increasing metallic radius
b) I < Br < F < Cl :Increasing electron gain enthalpy
c) B < C < N < O: Increasing first ionization enthalpy
d) $Al^{3+} < Mg^{2+} < Na^{+} < F^{-}$: Increasing ionic size

Q.2. The stability of + 1 oxidation state increases in the sequence

a) Tl < In < Ga < Al
b) In < Tl < Ga < Al
c) Ga < In < Al < Tl
d) Al < Ga < In < Tl

Q.3. What is the value of electron gain enthalpy of Na^{+} if IE_1 of Na = 5.1 eV ?
5.1 eV

a) –10.2 eV
b) +2.55 eV
c) +10.2 eV

Q.4. The charge/size ratio of a cation determines its polarizing power. Which one of the following sequences represents the increasing order of the polarizing power of the cationic species, K^{+}, Ca^{2+}, Mg^{2+}, Be^{2+}?

a) $Ca^{2+} < Mg^{2+} < Be^{2+} < K^{+}$
b) $Mg^{2+} < Be^{2+} < K^{+} < Ca^{2+}$
c) $Be^{2+} < K^{+} < Ca^{2+} < Mg^{2+}$
d) $K^{+} < Ca^{2+} < Mg^{2+} < Be^{2+}$

Q.5. Elements of IA group give flame colour due to

a) low IP
b) low m.pt.
c) softness
d) one electron in outermost shell.

Q.6. Which of the following species has lowest ionization potential?

a) O
b) O_2
c) O_2^{+}
d) O_2^{-}

Q.7. A sudden jump between the values of second and third ionization energies of an element would be associated with the electronic configuration

a) $1s^2\ 2s^2\ 2p^6 3s^1$
b) $1s^2\ 2s^2\ 2p^6 3s^2 3p^1$
c) $1s^2\ 2s^2\ 2p^6 3s^2 3p^2$
d) $1s^2\ 2s^2\ 2p^6 3s^2$

Q.8. In which of the following arrangements, the sequence is not strictly according to the property written against it?

a) HF < HCl < HBr <HI : increasing acid strength
b) $NH_3 < PH_3 < AsH_3 < SbH_3$: increasing basic strength
c) B < C < O < N : increasing first ionization enthalpy
d) $CO_2 < SiO_2 < SnO_2 < PbO_2$: increasing oxidising power

Q.9. Which of the Following Blocks Refers to the Element with 29 Atomic Number?

a) P-block
b) F-block
c) S-block
d) D-block

Q.10. The Diagonal Relationship can be Observed by -

a) Elements of 3rd period
b) Elements of 1st period
c) Elements of 2nd period
d) Elements of 2nd and 3rd periods

Q.11. Which of the following is the incorrect order of first ionisation enthalpy?

a) Sn < Pb
b) Sn < Ge
c) Ge < Si
d) None of these

Q.12. Increasing order of electro negativity is

a) Bi < P < S < Cl
b) P < Bi < S < Cl
c) S < Bi < P < Cl
d) Cl < S < Bi < P

Q.13. Which of the following pairs has both members from the same period of the periodic table.

a) Na – Ca
b) Na – Cl
c) Ca – Cl
d) Cl – Br

Q.14. The order of increasing sizes of atomic radii among the elements O, S, Se and As is :

a) As < S < O < Se
b) Se < S < As < O
c) O < S < As < Se
d) O < S < Se < As

Q.15. Which of the following properties generally decreases along a period?

a) Ionization Energy
b) Metallic Character
c) Electron Affinity
d) Valency

Q.16. Representative elements are those which belong to

a) p and d – Block
b) s and d – Block
c) s and p – Block
d) s and f – Block

Q.17. Which of the following oxides is amphoteric in character?

a) SnO_2
b) CO_2
c) SiO_2
d) CaO

Q.18. Arrange S, O and Se in ascending order of electron affinity

a) Se < S < O
b) Se < O < S
c) S < O < Se
d) S < Se < O

Q.19. The element californium belongs to a family of :

a) Alkali metal family
b) Actinide series
c) Alkaline earth family
d) Lanthanide series

Q.20. **The Diagonal Relationship can be Observed by -**

a) Elements of 3rd period
b) Elements of 1st period
c) Elements of 2nd period
d) Both a and c

Q.21. The elements of group 16 are called

a) noble gases
b) chalcogens
c) halogens
d) alkali metals

Q.22. The set representing the correct order of first ionization potential is

a) K > Na > Li
b) Be > Mg > Ca
c) B > C > N
d) Ge > Si > C

Q.23. The values of electronegativity of atoms A and B are 1.20 and 4.0 respectively. The percentage of ionic character of A-B bond is

a) 50%
b) 72.24%
c) 55.3%
d) 43%

Q.24. The group of elements in which the differentiating electron enters the antepenultimate shell of the atoms are called

a) f-block
b) p-block
c) s-block
d) d-block

Q.25. Which of the following processes involves absorption of energy?

a) $Cl + e^- \rightarrow Cl^-$
b) $O + e^- \rightarrow O^-$
c) $S + e^- \rightarrow S^-$
d) $O^- + e^- \rightarrow O^{2-}$