

- The group having isoelectronic species is?
 (A) O^{2-} , F, Na^+ , Mg^{2+} (B) BO^- , F, Na, Mg^+
 (C) O^{2-} , F^- , Na, Mg^{2+} (D) O^- , F^- , Na^+ , Mg^{2+}
- The relation stability of +1 oxidation state of group 13 elements follows the order:
 (A) $Al < Ga < Tl < In$ (B) $Tl < In < Ga < Al$
 (C) $Ga < Al < In < Tl$ (D) $Al < Ga < In < Tl$
- The process that is Not endothermic in nature is
 (A) $Ar(g) + e^- \rightarrow Ar_{(g)}^-$ (B) $H_{(g)} + e^- \rightarrow H_{(g)}^-$
 (C) $Na_{(g)} \rightarrow Na_{(g)}^+ + e^-$ (D) $O_{(g)}^- + e^- \rightarrow O_{(g)}^{2-}$
- The first ionization energy (in KJ /mol) of Na, Mg, Al, Si in KJ Mol⁻¹ respectively are:
 (A) 786, 737, 577, 496 (B) 497, 577, 737, 786
 (C) 786, 739, 577, 497 (D) 739, 577, 786, 487
- Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).
 Assertion (A) : Metallic character decreases and non-metallic character increases on moving from left to right in a period.
 Reason (R) : It is due to increase in ionization enthalpy and decrease in electron gain enthalpy, when one moves from left to right in a period.
 In the light of the above statements, choose the answer from the options given below:
 (A) (A) is false but (R) is true.
 (B) (A) is true but (R) is false.
 (C) Both (A) and (R) are correct and (R) is the correct explanation of (A).
 (D) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
- Which of the following pair of molecules contain odd electron molecule and an expanded octet molecule?
 (A) BCl_3 and SF_6 (B) NO and H_2SO_4
 (C) SF_6 and H_3SO_4 (D) BCl_3 and NO

7. Match List-I with List-II.

List-I (Oxide)

List-II (Nature)

(A) Cl_2O_7 (B) Na_2O (C) Al_2O_3 (D) N_2O

(I) Amphoteric

(II) Basic

(III) Neutral

(IV) Acidic

Choose the correct answer from the options given below:

(A) (A) - (IV), (B) - (III), (C) - (I), (D) - (II)

(B) (A) - (IV), (B) - (II), (C) - (1), (D) - (III)

(C) (A) - (II), (B) - (IV), (C) - (III), (D) - (I)

(D) (A) - (1), (B) - (II), (C) - (III), (D) - (IV)

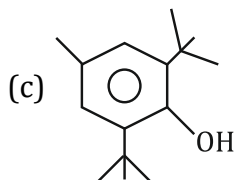
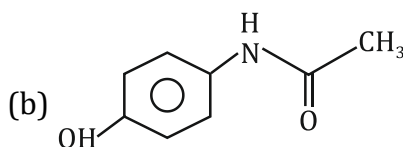
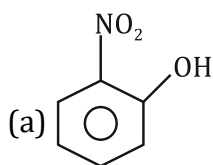
8. Identify the correct order of standard enthalpy of formation of sodium halides.

(A) $\text{NaI} < \text{NaBr} < \text{NaF} < \text{NaCl}$ (B) $\text{NaI} < \text{NaBr} < \text{NaCl} < \text{NaF}$ (C) $\text{NaF} < \text{NaCl} < \text{NaBr} < \text{NaI}$ (D) $\text{NaCl} < \text{NaF} < \text{NaBr} < \text{NaI}$

9. The correct increasing order of the ionic radii is

(A) $\text{Cl}^- < \text{Ca}^{2+} < \text{K}^+ < \text{S}^{2-}$ (B) $\text{K}^+ < \text{S}^{2-} < \text{Ca}^{2+} < \text{Cl}^-$ (C) $\text{S}^{2-} < \text{Cl}^- < \text{Ca}^{2+} < \text{K}^+$ (D) $\text{Ca}^{2+} < \text{K}^+ < \text{Cl}^- < \text{S}^{2-}$ 10. Amongst LiCl , RbCl , BeCl_2 and MgCl_2 the compounds with the greatest and the least ionic character, respectively are:(A) LiCl and RbCl (B) RbCl and BeCl_2 (C) MgCl_2 and BeCl_2 (D) RbCl and MgCl_2

11. The compound/s which will show significant intermolecular H-bonding is/are :



(A) (b) only

(B) (c) only

(C) (a) and (b) only

(D) (a), (b) and (c)

12. Arrange the following in increasing order of their covalent character.
 (A) CaF_2 (B) CaCl_2 (C) CaBr_2 (D) CaI_2
 Choose the correct answer from the options given
 (A) $B < A < C < D$ (B) $A < B < C < D$
 (C) $A < B < D < C$ (D) $A < C < B < D$
13. The number of molecule(s) or ion(s) from the following having non-planar structure is ____.
 NO_3^- , H_2O , BF_3 , PCl_3 , XeF_4 , SF_4 , XeO_3 , PH_4^+ , SO_3 , $[\text{Al}(\text{OH})_4]^-$
14. The intermolecular interaction that is dependent on the inverse cube of distance between the molecules is :
 (A) London force (B) hydrogen bond
 (C) ion-ion interaction (D) ion-dipole interaction
15. Which of the following species is not paramagnetic?
 (A) O_2 (B) B_2 (C) NO (D) CO
16. Total number of lone pair of electrons in I_3^- ion is:
 (A) 9 (B) 12 (C) 3 (D) 6
17. According to molecular orbital theory which of the following will not be a viable molecule?
 (A) H_2^- (B) H_2^{2-} (C) He_2^{2+} (D) He_2^+
18. Two pi and half sigma bonds are present in:
 (A) O_2^+ (B) N_2 (C) O_2 (D) N_2^+
19. Among the following, the molecule expected to be stabilized by anion formation is: C_2 , O_2 , NO , F_2
 (A) C_2 (B) F_2 (C) NO (D) O_2
20. The correct statement among the following is:
 (A) $(\text{SiH}_3)_3\text{N}$ is planar and less basic than $(\text{CH}_3)_3\text{N}$.
 (B) $(\text{SiH}_3)_3\text{N}$ is pyramidal and more basic than $(\text{CH}_3)_3\text{N}$.
 (C) $(\text{SiH}_3)_3\text{N}$ is pyramidal and less basic than $(\text{CH}_3)_3\text{N}$.
 (D) $(\text{SiH}_3)_3\text{N}$ is planar and less basic than $(\text{CH}_3)_3\text{N}$.

21. Which one of the following has largest ionic radius?
- (A) Li^+ (B) O_2^{2-} (C) B^{3+} (D) F^-
22. In the long form of the periodic table, the valence shell electronic configuration of $5s^2 5p^4$ corresponds to the element present in :
- (A) Group 16 and period 6 (B) Group 17 and period 6
(C) Group 16 and period 5 (D) Group 17 and period 5
23. Which of the following atoms has the highest first ionization energy?
- (A) Rb (B) Na (C) K (D) Sc
24. The correct order of electron affinity is:
- (A) $\text{O} > \text{F} > \text{Cl}$ (B) $\text{F} > \text{O} > \text{Cl}$
(C) $\text{F} > \text{Cl} > \text{O}$ (D) $\text{Cl} > \text{F} > \text{O}$

ANSWER KEY

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1. | (A) | 2. | (D) | 3. | (B) | 4. | (A) | 5. | (B) | 6. | (B) | 7. | (B) |
| 8. | (B) | 9. | (D) | 10. | (B) | 11. | (A) | 12. | (B) | 13. | (6) | 14. | (B) |
| 15. | (D) | 16. | (A) | 17. | (B) | 18. | (D) | 19. | (A) | 20. | (A) | 21. | (B) |
| 22. | (C) | 23. | (D) | 24. | (D) | | | | | | | | |