



DDS ACADEMY

CHEMISTRY CLASS TEST

- Which one of the following ions has the highest value of ionic radius ?
(1) Li^+ (2) B^{3+} (3) O^{2-} (4) F^-
- The formation of the oxide ion $\text{O}^{2-}_{(g)}$ requires first an exothermic and then an endothermic step as shown below :
$$\text{O}_{(g)} + e^- = \text{O}^-_{(g)} ; \Delta H^\circ = -142 \text{ kJmol}^{-1}$$
$$\text{O}^-_{(g)} + e^- = \text{O}^{2-}_{(g)} ; \Delta H^\circ = 844 \text{ kJmol}^{-1}$$

This is because :

 - (1) oxygen is more electronegative.
 - (2) oxygen has high electron affinity.
 - (3) O^- ion will tend to resist the addition of another electron.
 - (4) O^- ion has comparatively larger size than oxygen atom.
- Among Al_2O_3 , SiO_2 , P_2O_3 and SO_2 the correct order of acid strength is :
(1) $\text{SO}_2 < \text{P}_2\text{O}_3 < \text{SiO}_2 < \text{Al}_2\text{O}_3$ (2) $\text{SiO}_2 < \text{SO}_2 < \text{Al}_2\text{O}_3 < \text{P}_2\text{O}_3$
(3) $\text{Al}_2\text{O}_3 < \text{SiO}_2 < \text{SO}_2 < \text{P}_2\text{O}_3$ (4) $\text{Al}_2\text{O}_3 < \text{SiO}_2 < \text{P}_2\text{O}_3 < \text{SO}_2$
- Which of the following oxides is amphoteric in nature ?
(1) CaO (2) CO_2 (3) SiO_2 (4) SnO_2
- 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 ionisation enthalpy
(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
- Which of the following factors may be regarded as the main cause of lanthanide contraction ?
(1) Greater shielding of 5d electrons by 4f electrons.
(2) Poorer shielding of 5d electron by 4f electrons.
(3) Effective shielding of one of 4f electrons by another in the sub-shell.
(4) Poor shielding of one of 4f electron by another in the sub-shell.
- The lanthanide contraction is responsible for the fact that :
(1) Zr and Y have about the same radius (2) Zr and Nb have similar oxidation state
(3) Zr and Hf have about the same radius (4) Zr and Zn have same oxidation state.
- The increasing order of the first ionization enthalpies of the elements B, P, S and F (lowest first) is :
(1) $\text{F} < \text{S} < \text{P} < \text{B}$ (2) $\text{P} < \text{S} < \text{B} < \text{F}$ (3) $\text{B} < \text{P} < \text{S} < \text{F}$ (4) $\text{B} < \text{S} < \text{P} < \text{F}$
- Which of the following statements is true ?
(1) H_3PO_3 is a stronger acid than H_2SO_3 . (2) In aqueous medium, HF is a stronger acid than HCl.
(3) HClO_4 is a weaker acid than HClO_3 . (4) HNO_3 is a stronger acid than HNO_2 .
- Lanthanoid contraction is caused due to :
(1) the appreciable shielding on outer electrons by 4f electrons from the nuclear charge
(2) the appreciable shielding on outer electrons by 5f electrons from the nuclear charge
(3) the same effective nuclear charge from Ce to Lu
(4) the imperfect shielding on outer electrons by 4f electrons from the nuclear charge
- The stability of dihalides of Si, Ge, Sn and Pb increases steadily in the sequence.
(1) $\text{SiX}_2 << \text{GeX}_2 << \text{SnX}_2 << \text{PbX}_2$ (2) $\text{PbX}_2 << \text{SnX}_2 << \text{GeX}_2 << \text{SiX}_2$
(3) $\text{GeX}_2 << \text{SiX}_2 << \text{SnX}_2 << \text{PbX}_2$ (4) $\text{SiX}_2 << \text{GeX}_2 << \text{PbX}_2 << \text{SnX}_2$
- The set representing the correct order of ionic radius is :
(1) $\text{Na}^+ > \text{Li}^+ > \text{Mg}^{2+} > \text{Be}^{2+}$ (2) $\text{Li}^+ > \text{Na}^+ > \text{Mg}^{2+} > \text{Be}^{2+}$
(3) $\text{Mg}^{2+} > \text{Be}^{2+} > \text{Li}^+ > \text{Na}^+$ (4) $\text{Li}^+ > \text{Be}^{2+} > \text{Na}^+ > \text{Mg}^{2+}$



13. In which of the following arrangements, the sequence is not strictly according to the property written against it ?
 (1) $\text{HF} < \text{HCl} < \text{HBr} < \text{HI}$: increasing acid strength
 (2) $\text{NH}_3 < \text{PH}_3 < \text{AsH}_3 < \text{SbH}_3$: increasing basic strength
 (3) $\text{B} < \text{C} < \text{O} < \text{N}$: increasing first ionization enthalpy
 (4) $\text{CO}_2 < \text{SiO}_2 < \text{SnO}_2 < \text{PbO}_2$: increasing oxidising power
14. The correct sequence which shows decreasing order of the ionic radii of the elements is :
 (1) $\text{Al}^{3+} > \text{Mg}^{2+} > \text{Na}^+ > \text{F}^- > \text{O}^{2-}$
 (2) $\text{Na}^+ > \text{Mg}^{2+} > \text{Al}^{3+} > \text{O}^{2-} > \text{F}^-$
 (3) $\text{Na}^+ > \text{F}^- > \text{Mg}^{2+} > \text{O}^{2-} > \text{Al}^{3+}$
 (4) $\text{O}^{2-} > \text{F}^- > \text{Na}^+ > \text{Mg}^{2+} > \text{Al}^{3+}$
15. The outer electron configuration of Gd (Atomic No : 64) is :
 (1) $4f^3 5d^5 6s^2$ (2) $4f^8 5d^0 6s^2$ (3) $4f^4 5d^4 6s^2$ (4) $4f^7 5d^1 6s^2$
16. The number of lone pairs on Xe in XeF_2 , XeF_4 and XeF_6 respectively are :
 (A) 3, 2, 1 (B) 2, 4, 6 (C) 1, 2, 3 (D) 6, 4, 2
17. The hybridisation of the underline atom changes in :
 (A) AlH_3 changes to AlH_4^- (B) H_2O changes to H_3O^+
 (C) NH_3 changes to NH_4^+ (D) in all cases
18. Bond angle of $109^\circ 28'$ is found in :
 (A) NH_3 (B) H_2O (C) CH_3^+ (D) NH_4^+
19. In the anion HCOO^- the two C – O bonds are found to be of equal length. What is the reason for it ?
 (A) Electronic orbits of carbon atom are hybridised.
 (B) The C = O bond is weaker than the C – O bond.
 (C) The anion HCOO^- has two resonating structures.
 (D) The anion is obtained by removal of a proton from the acid molecule.
20. Which of the following compounds has the smallest bond angle in its molecule?
 (A) SO_2 (B) H_2O (C) H_2S (D) NH_3
21. The pair of species having identical shapes for molecules of both species is :
 (A) CF_4 , SF_4 (B) XeF_2 , CO_2 (C) BF_3 , PCl_3 (D) PF_5 , IF_5
22. The maximum number of 90° angles between bond pair–bond pair of electrons is observed in :
 (A) dsp^3 (B) sp^3d (C) dsp^2 (D) sp^3d^2
23. The correct order of bond angles (smallest first) in H_2S , NH_3 , BF_3 and SiH_4 is :
 (A) $\text{H}_2\text{S} < \text{SiH}_4 < \text{NH}_3 < \text{BF}_3$ (B) $\text{NH}_3 < \text{H}_2\text{S} < \text{SiH}_4 < \text{BF}_3$
 (C) $\text{H}_2\text{S} < \text{NH}_3 < \text{SiH}_4 < \text{BF}_3$ (D) $\text{H}_2\text{S} < \text{NH}_3 < \text{BF}_3 < \text{SiH}_4$
24. Which one of the following has the regular tetrahedral structure ?
 (A) XeF_4 (B) SF_4 (C) BF_4^- (D) $[\text{Ni}(\text{CN})_4]^{2-}$
 (Atomic number : B = 5, S = 16, Ni = 28, Xe = 54)
25. Which one of the following does not have sp^2 hybridized carbon?
 (A) Acetone (B) Acetic acid (C) Acetonitrile (D) Acetamide