Maximum : 100 marks

Time : 1 hour and 15 minutes

1. The total number of atoms in 6 grams of water is :

   (A) 6.02×10^{23} (B) 12.04×10^{23}

   (C) 18.06×10^{23} (D) 3.01×10^{23}

2. The percentage of an element M is 53 in its oxide of molecular formula M_2O_3. It's atomic mass is about :

   (A) 36 (B) 27

   (C) 18 (D) 23

3. The mass of oxygen required for the complete combustion of 2.5 grams of methane is :

   (A) 20 g (B) 15 g

   (C) 1.5 g (D) 10 g.

4. An organic compound with vapour density 28 on analysis gave 85.71% carbon and 14.29% hydrogen. Its molecular formula is :

   (A) C_3H_8 (B) C_3H_6

   (C) C_4H_8 (D) C_4H_{10}

5. The enthalpy change for the reaction $\frac{1}{2}X_2(g) \rightarrow X(g)$ is called :

   (A) enthalpy of transition (B) enthalpy of atomization

   (C) enthalpy of vaporization (D) enthalpy of formation

6. Lattice energy is the amount of energy released :

   (A) when one cation combines with one anion

   (B) when one mole cations combines with one mole anion

   (C) when one mole of ionic compound is formed from its cations and anions

   (D) all of the above

7. Energy required to dissociate 4 grams of gaseous hydrogen into free gaseous atoms is 208 kcal at 25°C. The H – H bond energy will be :

   (A) 104 kcal (B) 10.4 kcal

   (C) 1040 kcal (D) 1.04 kcal

8. The bond angles in molecules BeF_2, SF_6, CCl_4 and NH_3 are in the order :

(A) $SF_6 < CCl_4 < NH_3 < BeF_2$ (B) $SF_6 < NH_3 < CCl_4 < BeF_2$

(C) $NH_3 < SF_6 < CCl_4 < BeF_2$ (D) $NH_3 < CCl_4 < SF_6 < BeF_2$

9. The molarity of a solution obtained by mixing 50 ml of 0.40 M HCl and 50 ml of 0.20 M NaOH is :

(A) 0.20 M (B) 0.10 M

(C) 0.01 M (D) 0.02 M

10. In XeF_6 molecule, the hybridization of Xe atom is :

(A) sp^3 (B) sp^3d

(C) sp^3d^3 (D) dsp^2

11. Isopropyl bromide when treated with metallic sodium in ether gives :

(A) n-Hexane (B) 2, 2-Dimethyl propane

(C) 2-Methyl pentane (D) 2, 3-Dimethyl butane

12. The gas liberated at cathode during the electrolysis of sodium propionate is :

(A) Hydrogen (B) Carbon dioxide

(C) Ethane (D) n-Butane

13. But-1-ene and 2 – Methyl propene illustrate :

(A) Chain isomerism (B) Position isomerism

(C) Metamerism (D) Functional isomerism

14. Ozonolysis of 2-Methyl-2-butene gives :

(A) Acetone (B) Acetaldehyde

(C) Glyoxal (D) Acetone and Acetaldehyde

15. The pair which can be distinguished by ammoniacal cuprous chloride solution is :

(A) But-1-yne and Ethyne (B) But-1-yne and But-2-yne

(C) Propyne and Ethyne (D) n-Butane and But-2-yne

16. The monomer of Orlon is :

(A) $CH_2 = CF_2$ (B) $CF_2 = CF_2$

(C) $CH_2 = CH - CN$ (D) $CH_2 = CH - Cl$