CHEMISTRY

11 Std Reg. No. 11210

Time : 3.00 HR MARKS : 70

PART - A

Answer all the questions. 15x1=15

1. If the weight of metal oxide is 'x' g containing 'y' g of oxygen, the equivalent weight of metal will be

a) $E = \frac{8x}{y}$ b) $E = \frac{8(x-y)}{y}$ c) $E = \frac{8(y-x)}{y}$ d) $E = \frac{y}{8}$

2. Which of the following is the least electronegative element?

a) Bromine b) Chlorine c) Idoine d) Hydrogen

3. For p-electron, the Orbital angular momentum is

a) $\sqrt{3}\frac{h}{2\pi}$ b) $\frac{h}{2\pi}$ c) $\frac{\sqrt{3}h}{2\pi}$ d) $\sqrt{6}\frac{h}{2\pi}$

4. Which of the following is called as synthetic gas

a) $H_2O_{(g)}$ b) $CO+H_2O$ c) $CO+H_2$ d) $CO+N_2$

5. Among the following alkaline earth metal halides, One which is Covalent and Soluble in organic solvent is

a) $BeCl_2$ b) $CaCl_2$ c) $SrCl_2$ d) $MgCl_2$

6. The value of the gas constant 'R' is

a) 0.0821 dm^2 atm.mol^{-1} K^{-1} b) 8.314 J K^{-1} mol^{-1} c) 8.314 Pa m^3 K^{-1} mol^{-1} d) All of these

7. The intensive property among the quantities below is

a) mass b) volume c) enthalpy d) mass/volume

8. The ratio of KP/KC for the reaction $CO_{(g)} + 1/2O_{2(g)} \rightleftharpoons CO_{2(g)}$ is

a) $\frac{R}{T}$ b) RT c) $(RT)^{1/2}$ d) $(RT)^{-1/2}$

9. Normality of 1.25 M sulphuric acid is

a) 1.25N b) 3.75N c) 2.5N d) 2.25N

10. Non-zero dipole moment is shown by

a) CO_2 b) water c) carbon tetra chloride d) P-dichloro benzene

11. In an Organic compound phosphorous is estimated as

a) $Mg_2P_2O_7$ b) $Mg_3(PO_4)_2$ c) H_3PO_4 d) P_2O_5

12. In which of the following is neutral nucleophile

a) ROH b) I^- c) $RCOO^-$ d) All of these

13. The compound, formed at anode in the electrolysis of an aqueous solution of potassium acetate are

a) CH_4 and H_2 b) CH_4 and CO_2 c) C_2H_6 and CO_2 d) C_2H_4 and Cl_2

14. Which of the following reaction mechanism follows the order Tertiary >Secondary>Primary>CH

a) S_N1 b) S_N2 & E^2 c) S_N2 d) All of these

15. Release of oxides of nitrogen and hydro carbon into atmosphere by motor vechiles is prevente using

a) Grid chamber b) Scrubbers c) tickling Filters d) Catalytic convertors

PART - B

Answer all the 6 questions. (No 24 is Compulsory) 6x2=12

16. What do you understand by the term mole?
17. State Heisenberg's uncertainty principle?
18. Give IUPAC name of the following elements with atomic number 108,110,114,222
19. Discuss the position of hydrogen in the periodic table?
20. Why alkali metals gives characteristics colour in Flame?
21. What is Joule Thomson effect.
22. Distinguish between extensive and extensive property?
23. State law of mass action?
24. Calculate the value of ΔU and ΔH on heating 128g of oxygen from $0^{\circ}C$ to $100^{\circ}C$. Cv and Cp on a average are 21 and 29 $J\ mol^{-1}\ K^{-1}$ (The difference is 8 $J\ mol^{-1}\ K^{-1}$ which is approximately equal to R)

PART - C

Answer all the 6 questions. (No 33 is Compulsory) 6x2=18

25. How many angular and radial nodes for 2s, 4p, 5d and 4f orbital exhibit?
26. Explain the fact that the second ionization potential is always higher than first ionization potential?
27. What are intestinal hydrides? Give an example?
28. What is plaster of Pairs? How is it prepared?
29. List the characteristics of Gibbs Free energy?
30. Write the structural Formula for the following Compounds?
    a) m-dinitrobenzene b) p-dichlorobenzene c) 1,3,5 trimethyl benzene
31. What is electrometric effect? Give its types?
32. Discuss the harmful effects of acid rain?
33. Identify the Compound (A) and (B) $R-C\equiv N \xrightarrow{H_2O/H^+} A \xrightarrow{H_2O/H^+} B$

PART - D

Answer all the questions. 5x5=25

34. a) (i) Write notes on Principal and Azimuthal quantum numbers. (3)
    (ii) Describe the Aufbau principle. [OR] (2)
    b) (i) Define electro negativity. (3)
    (ii) What are the uses of heavy water? (2)
35. a) (i) Disucss the Similarities between Beryllium and Aluminium. (3)
    (ii) Derive an ideal gas equation. [OR] (2)
    b) Derive the values of Critical constants in terms of Vander walls Constants. (5)
36. a) Derive the relation between ΔH and ΔU for an ideal gas explain each term involved in the equation. [OR] (5)
    b) Obtain expression for lowering of vapor pressure when nonvolatile soulte is dissolved in solvent. (5)
37. a) i) Draw the Lewis structure for i) H_2O ii) HNO_3 iii) SO_3 (3)
    ii) What is dipole moment? [OR] (2)
    b) Explain the salient features of molecular orbital theory. (5)
38. a) i) Write the IUPAC names for the following compounds. (5)

    i) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-\underset{\displaystyle Br}{\underset{|}{CH}}-CH_3$ ii) CH_3-O-CH_3

    iii) $CH_3-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CHO$ iv) CH_3CH_2OH v) $CH_3-\underset{\displaystyle O}{\underset{\|}{C}}-CH_3$ [OR]

    b) What is BHC, Give its preparation and its one use. (5)