CLASS XII

CHEMISTRY

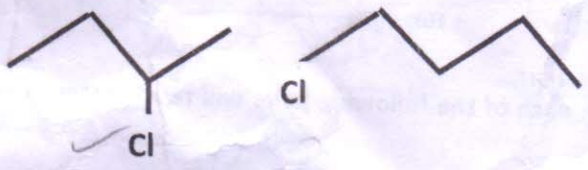## FIRST TERM EXAMINATION 2016

MM: 70   TIME: 3Hrs

1 Mark Questions

1. What is the effect of temperature on chemisorption?
2. Identify the chiral molecule in the following pair :

3. The conversion of primary aromatic amine into diazonium salts is known as

4. Write the structure of p–methylbenzaldehyde.
5. How many coulombs are required to produce one mole of oxygen from water?

2 Marks Questions

6. An element with density 2.8 gcm^{-3} forms a fcc unit cell with edge length 4 x 10^{-8} cm. Calculate the molar mass of the element.
7. (i) What type of non- stoichiometric point defect is responsible for the pink colour of LiCl?
   (ii) What type of stoichiometric defect is shown by NaCl?
8. State Kohlrausch law of independent migration of ions. Why the conductivity of a solution does decreases with dilution?
9. What do you understand by broad spectrum and narrow spectrum antibiotics? Give one example of each.
10. What are dispersed phase and dispersion medium in milk?

3 Marks Questions

11. Write the equations involved in the following reactions :
    (i)   Reimer – Tiemann reaction
    (ii)   Williamson synthesis
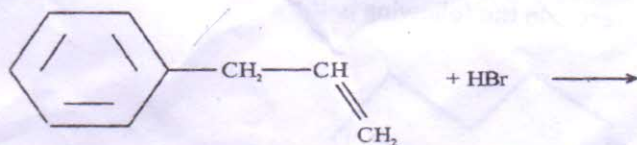
12. (a) Calculate $\Delta_r G^0$ for the reaction

$$Mg(s) + Cu^{2+}(aq) \longrightarrow Mg^{2+}(aq) + Cu(s)$$

Given: E^0cell = + 2.71 V, 1F = 96500 C mol^{-1}

(b) Name the type of cell which was used in Apollo space programme for providing electrical power.

13. What are emulsions? What are their different types? Give one example of each type.

14. (a) Draw the structures of the major monohalo products in each of the following reaction :

(b) Which halogen compound in each of the following pairs will react faster in S_N^2 reaction:

(i) CH_3Br or CH_3I

(ii) $(CH_3)_3C$-Cl or CH_3Cl

15. A bottle of sulphuric acid is labelled as 13% w/w.
    (a) What is the mole fraction of each component?
    (b) What is the molality of the solution?
    (c) Find the molarity of the solution if the density of the solution is 1.10g/ml
        (molecular mass of sulphuric acid is 98)

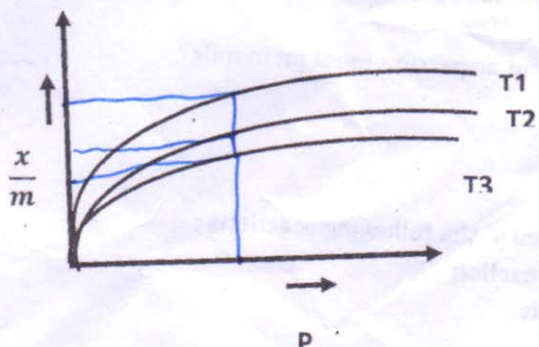16. The conductivity of 0.01 M ethanoic acid solution at 25°C is 1.63 x 10^{-4} Scm^{-1}. Given :
    Λ^0 HCl = 426 Scm^2 mol^{-1}
    Λ^0 CH3COONa = 91 scm^{2}mol$^-$
    Λ^0 NaCl = 126 Scm^{2}mol^{-1}
    Calculate the percentage dissociation of ethanoic acid.

17. You are given the following graph between $\frac{x}{m}$ and the pressures at different temperatures:

(i)   Why does $\frac{x}{m}$ become constant at high pressure?

(ii) Arrange the three temperatures in the order of increasing value.

(iii) Define adsorption isotherm.

18. An organic compound A with molecular formula C_8H_8O forms an orange red precipitate with 2, 4-DNP and gives yellow precipitate with iodine in presence of sodium hydroxide. It neither reduces Tollen's or Fehling's reagent, nor does it decolourise bromine water. On drastic oxidation with chromic acid, it gives carboxylic acid B with molecular formula $C_7H_6O_2$. Write all the reactions involved.

19. (a) Complete the following reactions by writing down the structure of the major products :

(i) $CH_3CH_2CH_2CH_2Cl \xrightarrow[\text{heat}]{KOH/C_2H_5OH}$

(ii)

$\xrightarrow[\text{300atm}]{\text{NaOH/ 623 K}}$
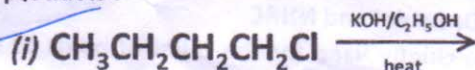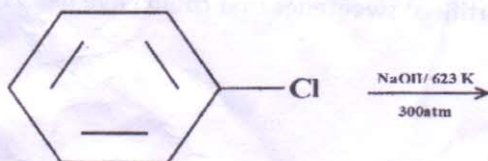
(b) Convert propene into 1-Fluoropropane

20. Give a chemical test to distinguish between the following pair of organic compounds:

(i)   Ethanal and propanal

(ii) Ethanoic acid and methanoic acid

(iii) Benzoic acid and phenol

21. Give reason :

(i)   Iron is a ferromagnetic substance but becomes paramagnetic at high temperature.

(ii) ZnO is white at low temperature but yellow at high temperature.

(iii) What is the percentage of an un occupied space in a crystal having a packing pattern ABC ABC........?

22. (i)   Define osmotic pressure

(ii) Explain how molecular mass of a solute can be determined using osmotic pressure.

(iii) Why is osmotic pressure preferred over other colligative properties?

4 Marks Question

23. On the occasion of world health day, Dr Satpal organized a health camp for the poor farmers living in a nearby village. After checkup, he was shocked to see most of the farmers suffered from cancer due to regular exposure to pesticides and many were diabetic. They distributed free medicines to them. Dr Satpal immediately reported the matter to the National Human Rights Commission (NHRC). On the suggestion of NHRC, the government decided to provide medical care, financial assistance, setting up of super specialty hospitals for treatment and prevention of the deadly disease in the affected villages all over India.

    (i) Write the values shown by Dr Satpal and NHRC

    (ii) What type of analgesics are chiefly used for the relief of pains of terminal cancer

    (iii) Give an example of artificial sweetener that could have been recommended to diabetic patients.

5 Marks Questions

24. (a) What type of deviation is shown by a mixture of ethanol and acetone? Give reason. +ive

    (b) Calculate the mass of the compound (molar mass = 256 g mol^{-1}) to be dissolve in 5 g of benzene to lower its freezing point by 0.48 K (K_f = 5.12 K kg mol^{-1})

25. (a) Write the products formed when CH_3CHO reacts with the following reagents :

    (i) HCN

    (ii) H_2NOH

    (iii) CH_3CHO in presence of dilute NaOH

    (b) Account for the following:

    (i) Cl-CH_2COOH is a stronger acid than CH_3COOH

    (ii) Carboxylic acids do not give reactions of carbonyl group

26. (a) Write the mechanism for the following reactions :

    (i) Acid catalyzed dehydration of ethanol to form ethane

    (ii) Bromination of phenol using Br_2 / CS_2

    (b) Arrange the following set of compounds in order of property indicated:

    (i) Pentanol, n –butane, ethoxy ethane, butan -2-ol   (increasing boiling point)

    (ii) Propan-1-ol, 2, 4, 6- trinitrophenol, nitro phenol, 3, 5-dinitrophenol, phenol, 4-methylphenol (increasing acidic strength)