

(ENGLISH VERSION)

1. Answer the following (Alternatives are to be noted) : 2 × 5 = 10

- (a) Explain, why the unit molality is used instead of molarity for the measurement of Elevation of boiling point or Depression of freezing point of the solution. 2

OR

What is Azeotrope ? Give example. 2

- (b) Which one of KCl and K_2SO_4 is very much active for the coagulation of $Fe(OH)_3$ solution ? Explain why. 2

OR

What is protective colloid ? Write with an example. 2

- (c) What are interhalogen compounds ? Give example. 2

OR

What are the utilities of interhalogen compounds ? Explain. 2

- (d) Give two differences in between Double Salt and Complex Salt. 2

OR

Give two fundamental differences in between Nucleoside and Nucleotide. 2

- (e) Give the formula of D-glucose. What does 'D' imply ? 2

2. Answer the following questions (Alternatives are to be noted) : 3 × 9 = 27

- (a) On crystallisation of a solid metal (atomic mass 52) a body centred cubic lattice is formed. If its unit cell edge length is 287 pm, calculate the radius of the atom and density of the solid metal. 3

OR

What are Osmosis and Osmotic pressure ? What is Hypertonic solution ?

1 + 1 + 1

- (b) 0.9 g of a non-volatile, non-electrolyte solute when dissolved in 87.99 g of an organic liquid the boiling point of the solution is increased by 0.25°C . The molecular weight of the solute is 103. Find out the molal boiling point constant (K_b) of the organic liquid. 3

OR

State the van't Hoff's laws of Osmotic Pressure. 3

- (c) Calculate the equilibrium constant at 25°C of the following equation of a Daniell cell : $\text{Zn (s)} + \text{Cu}^{2+} (\text{aq}) \rightleftharpoons \text{Zn}^{2+} (\text{aq}) + \text{Cu (s)}$

[Given : $E^{\circ}_{\text{Zn}^{2+}/\text{Zn}} = -0.76 \text{ V}$ and $E^{\circ}_{\text{Cu}^{2+}/\text{Cu}} = +0.34 \text{ V}$.

$$R = 8.314 \text{ JK}^{-1}\text{mol}^{-1}]$$

OR

Find the relation between resistance, specific conductance and cell constant of the electrolytic solution of the conductivity Daniell cell.

Establish the relation between molar conductance and specific conductance of a solute. 1 + 2

- (d) What is the Order of chemical reaction ? Deduce the mathematical expression for half-life period of a First Order Decomposition Reaction in which 30% of the reaction is completed in 40 minutes. 1 + 2

OR

State the unit of the rate constant of the Zero Order Reaction.

Establish the integrated rate equation of a Zero Order Reaction involving a single reactant.

1 + 2

(e) What is meant by the Gold Number of Starch is 20 ? Explain, Adsorption is the surface related phenomenon.

1 + 2

(f) What is optical isomerism ? Give one example for each of *d* & *l* configuration of same enantiomer.

1 + 2

(g) What is Lucas Reagent ? Distinguish 1°, 2° and 3° alcohols by Lucas test.

1 + 2

OR

Give examples of the following reactions with equation :

(i) Williamson Synthesis Reaction

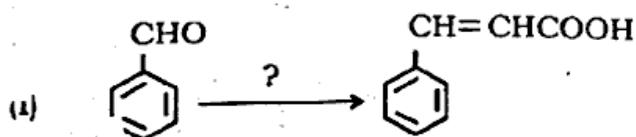
(ii) Reimer-Tiemann Reaction

(iii) Benzoin Condensation Reaction.

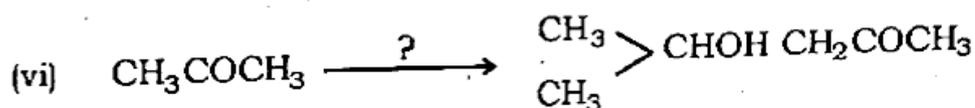
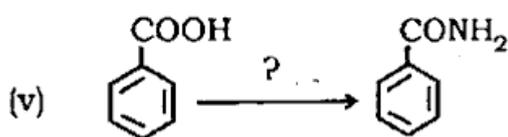
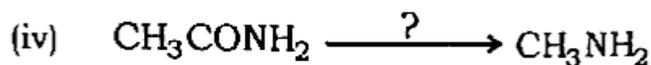
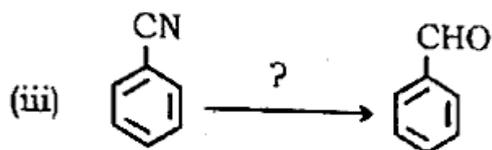
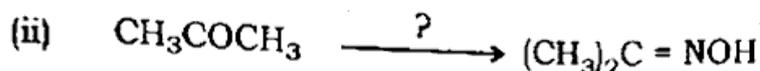
1 × 3 = 3

(h) Write the reagents required in the following reactions :

$\frac{1}{2} \times 6 = 3$



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- (i) How will you identify a primary amine? Give equation with an example. 3

OR

What will be product in each case — acidic, basic or neutral medium

reduction of nitrobenzene?

1 × 3 = 3

3. Answer the following questions (Alternatives are to be noted) :

5 × 3 = 15

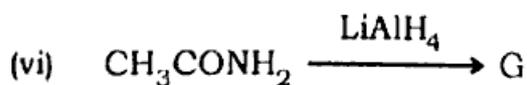
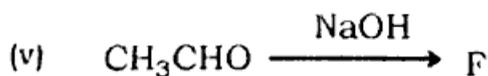
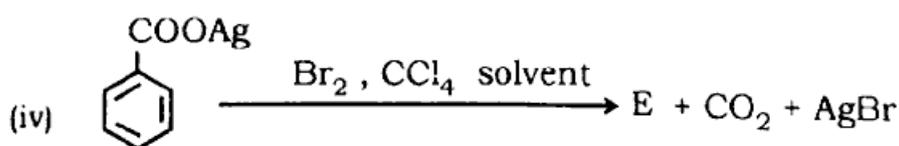
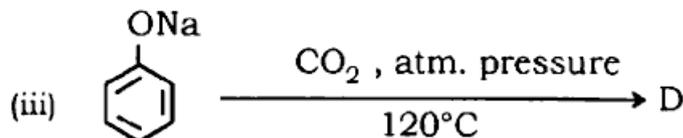
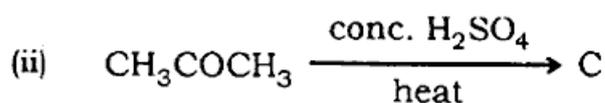
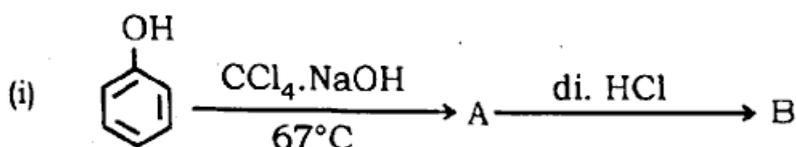
- (a) What is the molecularity of the reaction? Establish the integrated rate equation of the First Order Reaction.

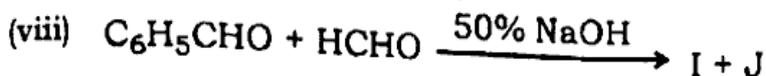
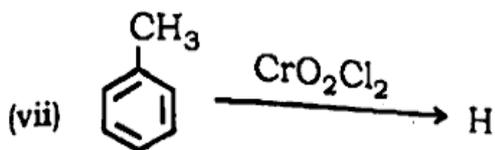
2 + 3

OR

State with individual units of rate of reaction, rate constant and half-life of the First Order Reaction. 2 + 1½ + 1½

- (b) Write the structural formulae of the organic products from A to J in the following reactions :





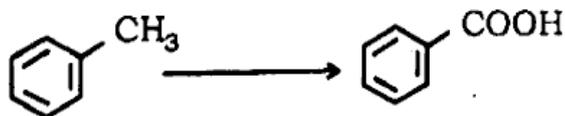
OR

Differentiate between the following with the help of one chemical property :

(i) Formic acid and Acetic acid

(ii) Phenol and Benzyl alcohol.

How to convert the following ?



2 + 2 + 1

(c) How will you prepare the following (Write with conditions and equation) :

$2\frac{1}{2} \times 2 = 5$

(i) O_3 from O_2

(ii) Cl_2 from HCl.

OR

(i) Compare the bleaching property of Cl_2 and SO_2 .

(ii) What happens when (only equation) —

- (a) NH_4OH solution is added in excess to CuSO_4 solution ?
- (b) Ozone gas is passed through H_2SO_4 and KI solution ?
- (c) NaCl is heated with Manganese dioxide and conc. sulphuric acid ?

2 + 3

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