

PUC PYQ 2022

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CHEMISTRY

- Q1** Name the type of crystalline solid, which is electrical insulator in solid state but conduct electricity in aqueous solution. [PUC 2022]
- Q2** Mention one practical utility of reverse osmosis. [PUC 2022]
- Q3** At constant temperature, different gases have different K_H - value. What does this statement suggest? [PUC 2022]
- Q4** Give an example for inert electrode. [PUC 2022]
- Q5** What is the order of reaction which has rate expression $\text{Rate} = K[A]^{-1}[B]^{5/3}$? [PUC 2022]
- Q6** What is meant by selectivity of a catalyst? [PUC 2022]
- Q7** Give an example for heterogeneous catalysis. [PUC 2022]
- Q8** Name the method used for concentration of sulphide ore? [PUC 2022]
- Q9** Which noble gas has lowest boiling point? [PUC 2022]
- Q10** Name the transition metal present in bronze alloy? [PUC 2022]
- Q11** Define the term racemic mixture. [PUC 2022]
- Q12** Write IUPAC name of $\text{CH}_3 - \text{O} - \text{C}_2\text{H}_5$. [PUC 2022]
- Q13** Aldehydes are more reactive than ketones towards Nucleophilic addition reaction. Give reason. [PUC 2022]
- Q14** What are copolymers? [PUC 2022]
- Q15** Mention the role of Sodium benzoate in food. [PUC 2022]
- Q16** An element crystallises in Face Centered Cubic (FCC) lattice. The edge length of unit cell is 556pm and density is 1.55 g cm^{-3} , Calculate the Atomic mass (M) of the element. ($N_A = 6.022 \times 10^{23} \text{ atoms mol}^{-1}$). [PUC 2022]
- Q17** Define molarity (M). How does molarity vary with temperature? [PUC 2022]
- Q18** Mention any two of applications of Kohlrausch's law. [PUC 2022]
- Q19** What is molar conductance? How is it related to concentration 'C' mol m^{-3} and conductivity 'K' Sm^{-1} ? [PUC 2022]
- Q20** What is the role of coke in the extraction of zinc from zinc oxide? Write the chemical equation. [PUC 2022]
- Q21** How do xenon fluorides react with fluoride ion donors like NaF? Give equation. [PUC 2022]
- Q22** Write S_N2 mechanism of conversion of chloromethane to methanol. [PUC 2022]
- Q23** Complete the equation.

$$\text{_____} + \text{HN O}_2 \xrightarrow{\text{NaNO}_2 + \text{HCl}} [\text{H}_3 \text{CN}_2^+ \text{Cl}^-]$$

$$\xrightarrow{\text{H}_2\text{O}} \text{CH}_3 \text{OH} + \text{_____} + \text{HCl}$$
 [PUC 2022]
- Q24** What are analgesics? Give an example for the Narcotic analgesics. [PUC 2022]



- Q25** Why soap does not work in hard water? [PUC 2022]
- Q26** In the extraction of Aluminium by Hall – Heroult process,
(a) Write overall cell reaction.
(b) What is the role of Na_3AlF_6 ?
(c) On which electrode Aluminium metal deposits. [PUC 2022]
- Q27** Write the chemical equations with necessary conditions Involved in the manufacture of Nitric acid by Ostwald's process. [PUC 2022]
- Q28** Complete the following equation:
(a) $\text{CaO} + \text{H}_2\text{O}$
(b) $\text{SO}_2 + \text{H}_2\text{O}$
(c) $\text{Na}_2\text{SO}_3 + \text{H}_2\text{O} + \text{SO}_2$ [PUC 2022]
- Q29** (a) How is Chlorine prepared in laboratory using KMnO_4 ?
(b) Chlorine water on standing loses yellow colour. [PUC 2022]
- Q30** (a) Calculate spin only magnetic moment of ferric ion. [Given: atomic number of iron is 26]
(b) Between Sc^{+3} and Cu^{+2} ions, which is colourless ? [PUC 2022]
- Q31** Write the balanced chemical equations involved in the manufacture of $\text{K}_2\text{Cr}_2\text{O}_7$ from chromite ore. [PUC 2022]
- Q32** What is Lanthanoid contraction? Mention any two consequences of it. [PUC 2022]
- Q33** Write the geometrical isomeric structures of $[\text{Co}(\text{en})_2\text{Cl}_2]$. What is the coordination number of Cobalt in this complex ? [PUC 2022]
- Q34** Using Valence Bond Theory [VBT], explain geometry, hybridisation and magnetic property of $[\text{CoF}_6]^{-3}$ ion. [Atomic number of Cobalt is 27]. [PUC 2022]
- Q35** What are Heteroleptic complexes? Give an example.
If $\Delta_0 < P$, on the basis of Crystal Field Theory [CFT], write the electronic configuration of d^4 -ion in octahedral complexes. [PUC 2022]
- Q36** (a) Calculate the packing efficiency in simple cubic crystal lattice.
(b) Calculate the number of particles (atoms) per unit cell in Body Centred Cubic (BCC) crystal Lattice. [PUC 2022]
- Q37** (a) On dissolving 3.46g of solute in 100g of water, the boiling point of solution was raised to that of pure water by 0.12K. Calculate the molar mass of the non-volatile solute. (Given: K_b of water is 0.51K kg mol^{-1})
(b) What type of deviation from Raoult's law is observed When equal volume of ethanol and acetone are mixed? Mention the reason for it. [PUC 2022]
- Q38** (a) Calculate the ΔG^0 at 298K for the cell reaction :
 $\text{Mg}_{(s)} + \text{Cu}^{2+}_{(aq)} \rightarrow \text{Mg}^{2+}_{(aq)} + \text{Cu}_{(s)}$
(b) Given:
 $E^\circ(\text{Mg}^{2+} / \text{Mg}) = -2.37$
 V and $E^\circ(\text{Cu}^{2+} / \text{Cu}) = +0.34\text{ V}$; and $F = 96487\text{ C mol}^{-1}$.
Suggest any two methods to prevent corrosion of iron. [PUC 2022]
- Q39** (a) Derive integrated rate equation for the rate constant of a zero-order reaction.
(b) Mention any two factors which influence the rate of the reaction. [PUC 2022]



Q40 (a) What is effective collision? Write any two factors responsible for effective collision.
 (b) Show that the half-life period of a first order reaction is independent of initial concentration of reacting species. [PUC 2022]

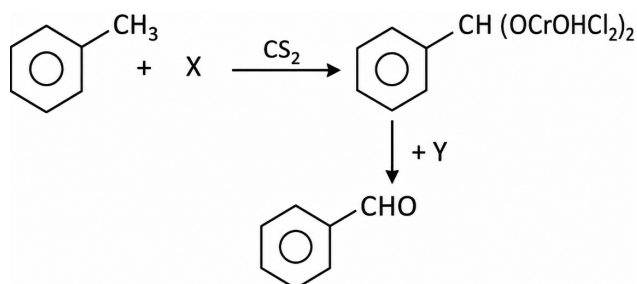
Q41 (a) Give any three differences between Lyophilic and Lyophobic Colloids.
 (b) Write the expression for Freundlich adsorption isotherm. What is the value of $1/n$ to show that adsorption can be independent of pressure? [PUC 2022]

Q42 (a) Explain Swarts reaction with an example.
 (b) What are Grignard reagents? Write its general formula.
 (c) Name the poisonous gas evolved when chloroform is oxidised by air in the presence of light. [PUC 2022]

Q43 (a) Write three steps involved in the mechanism of acid catalysed dehydration of ethanol to ethene.
 (b) What is Lucas reagent? Which class of alcohols does not readily form turbidity with Lucas reagent? [PUC 2022]

Q44 (a) How was phenol manufactured by cumene?
 (b) Explain Kolbe's reaction with equation. [PUC 2022]

Q45 (a) How does formaldehyde reacts with concentrated alkali on heating? Name this reaction.
 (b) Identify the reagent X and y used in the following conversion.



[PUC 2022]

Q46 (a) What type of carboxylic acids undergoes Hell-Volhard-Zelinsky (HVZ) reaction? Explain this reaction with example.

(b) Among formic acid and acetic acid, which is weaker acid and why? [PUC 2022]

Q47 (a) Explain carbylamine reaction with example.
 (b) How is Aniline prepared from nitro benzene?
 (c) Give the IUPAC name of trimethylamine. [PUC 2022]

Q48 (a) Write the Haworth structure of Maltose.
 (b) What are polysaccharides? Give an example.
 (c) Name any one vitamin that is stored in liver and adipose tissues. [PUC 2022]

Q49 (a) What are fibrous proteins? Name the protein in hair.
 (b) Mention two hormones which regulates the glucose level in the blood.
 (c) Name the base present only in DNA, but not in RNA [PUC 2022]

Q50 (a) Name the two monomers present in Nylon-6,6.
 (b) Explain Vulcanisation of rubber.
 (c) Write the name of the biodegradable polymer used in manufacture of orthopaedic devices. [PUC 2022]



Answer Key

Q1 (H & S)
Q2 (H & S)
Q3 (H & S)
Q4 (H & S)
Q5 (H & S)
Q6 (H & S)
Q7 (H & S)
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Q47 (H & S)
Q48 (H & S)
Q49 (H & S)
Q50 (H & S)



Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:

Ionic Solid

OR

Ionic Crystalline Solid

Q2 Text Solution:

Desalination of Sea water.

Q3 Text Solution:

K_H is function of the nature of the gas OR

K_H depends on the nature of the gas OR

Solubility of gas in liquid OR

Different gases will have different solubility

Q4 Text Solution:

Platinum (Pt) electrode OR

Gold (Au) electrode

Q5 Text Solution:

Order = $2/3$ or 0.66

Q6 Text Solution:

The ability of a catalyst to direct a reaction to give a particular product is called selectivity of a catalyst.

Q7 Text Solution:

1. Manufacture of ammonia by Haber's

process : $N_{2(g)} + 3H_{2(g)} \xrightarrow{Fe(g)} 2NH_{3(g)}$

2. Manufacture of sulphuric acid by Contact

process : $2SO_{2(g)} + O_{2(g)} \xrightarrow{V_2O_5(g)} 2SO_{3(g)}$

3. Manufacture of nitric acid by Ostwald's process :

$4NH_{3(g)}$

$+ 5O_{2(g)} \xrightarrow[500\text{ K, 9 bar}]{Pt/Rh^2 \text{ gauge catalyst}} 4NO_{(g)}$

$+ 6H_2O_{(g)}$

4. Manufacture of Sulphuryl chloride:

$SO_{2(g)} + Cl_{2(g)} \xrightarrow{Char \text{ coal (s)}} SO_2 Cl_{2(g)}$

5. Vegetable Oil_(l) + $nH_{2(g)} \xrightarrow{Ni(s)}$ Vanaspathi

OR Fat OR Vegetable Ghee

(Either name or Reaction; For reactions, physical state should be specified).

Q8 Text Solution:

Froth flotation method

Q9 Text Solution:

Helium OR He

Q10 Text Solution:

Copper OR Cu

Q11 Text Solution:

Equimolar (1:1) mixture of dextrorotatory (d) and leavorotatory (l) isomers.

OR

A mixture containing two enantiomers in equal proportions will have zero optical rotation are known as racemic mixture.

Q12 Text Solution:

Methoxyethane

Q13 Text Solution:

Due to steric effect (hindrance)

OR

Electronic effect

OR

Due to steric effect (hindrance) of alkyl groups and decreased electrophilicity of carbonyl carbon due to (+I) inductive effect.

Q14 Text Solution:

Polymers formed by addition polymerisation of more than one type of monomers.

Q15 Text Solution:

Food preservative OR To avoid spoilage of food.



Android App

iOS App

PW Website

Q16 Text Solution:

$$d = \frac{z \cdot M}{a^3 \cdot N_A} \text{ OR } M = \frac{d \times a^3 \times N_A}{Z}$$

OR

$$= \frac{1.55 \times (556 \times 10^{-10})^3 \times 6.022 \times 10^{23}}{4} = 40.1 \text{ gmol}^{-1}$$

or 40 gmol^{-1} **Q17 Text Solution:**

The number of moles of solute dissolved in 1 liter (1 dm^3) or 1000 cm^3 of a solution is called molarity.

Molarity varies inversely with temperature.

OR $M \propto 1/T$ OR

As the temperature increases, molarity of the solution decreases.

Q18 Text Solution:

1. In the Calculation of molar conductivity at infinite dilution (Λ_0) for weak electrolytes.

2. In the Calculation of Degree of Dissociation (α).

3. In the Calculation of Dissociation Constant (K).

Q19 Text Solution:

Molar conductance is the conductance of all the ions produced in the entire solution which contains one mole of an electrolyte.

OR

Molar conductance is the conductance of the volume of solution containing one mole of electrolyte kept between two electrodes with area of cross section A and distance of unit length.

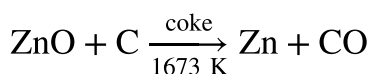
$$\Lambda_m = \frac{\kappa}{c}$$

Q20 Text Solution:

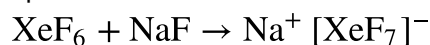
Reducing agent

OR

Coke acts as Reducing agent

**Q21 Text Solution:**

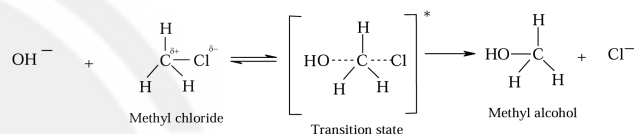
Xenon fluorides react with fluoride ion donors like NaF to form Fluoro anions OR anionic species.

**Q22 Text Solution:**

S_N2 mechanism involves only one step.

The nucleophile OH^- attacks electron deficient carbon atom from the back side (rear side) of the carbon atom to form unstable transition state. In the transition state a partial ($\text{HO} - \text{C}$) bond is formed and partial $\text{C} - \text{Cl}$ bond is broken. The product methyl alcohol obtained has inversion configuration.

OR

**Q23 Text Solution:**

CH_3NH_3 and N_2

Q24 Text Solution:

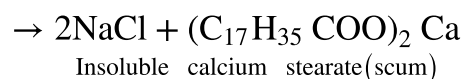
The chemicals used to relieve pain or pain killers are called Analgesics.

Example: Morphine OR Heroin

OR Codeine

Q25 Text Solution:

Hard water contains calcium and magnesium ions. When soaps are dissolved in hard water, these ions displace sodium or potassium ions from their salts and form insoluble calcium or magnesium salts of fatty acids. These insoluble salts separate as scum.



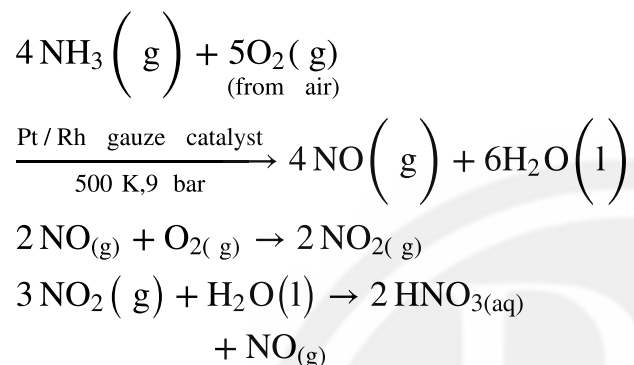
Q26 Text Solution:

(a) Overall Cell Reaction: $2\text{Al}_2\text{O}_3 + 3\text{C} \rightarrow 4\text{Al} + 3\text{CO}_2$

(b) Cryolite (Na_3AlF_6) acts as

1. Electrolyte
2. Increases the conductivity
3. Lowers the melting point of mixture.

(c) Cathode.

Q27 Text Solution:**Q28 Text Solution:**

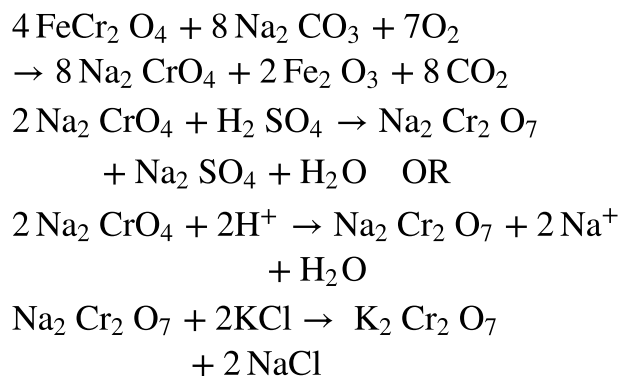
- (a) $\text{Ca}(\text{OH})_2$ OR Calcium hydroxide.
- (b) H_2SO_3 OR Sulphurous acid
- (c) 2NaHSO_3 OR Sodium hydrogen sulphite

Q29 Text Solution:

- (a) Chlorine gas is prepared by the action of dil HCl on potassium permanganate. $2\text{KMnO}_4 + 16\text{HCl} \rightarrow 2\text{KCl} + 2\text{MnCl}_2 + 8\text{H}_2\text{O} + 5\text{Cl}_2$.
- (b) Due to formation of hydrogen chloride (HCl) and hypochlorous acid (HOCl).

Q30 Text Solution:

- $\text{Fe} (Z = 26, 3d^6, 4s^2)$
 $\rightarrow \text{Fe}^{3+} ([\text{Ar}] 3d^5 4s^0)$
- (a) Hence it has 5 unpaired electrons i.e., $n = 5$
 $\mu = \sqrt{n(n+2)} \text{ BM}$
 $\mu = \sqrt{5(5+2)} = \sqrt{35} = 5.91 \text{ BM}$
- (b) Sc^{+3} ion is colorless OR Sc^{+3} .

Q31 Text Solution:**Q32 Text Solution:**

The overall decrease in atomic radii and ionic radii from lanthanum to lutetium (across lanthanoids) is called Lanthanoid contraction.

Consequences:

1. The radii of 3rd row transition series elements (metals) are almost similar to that of 2nd row transition series elements.

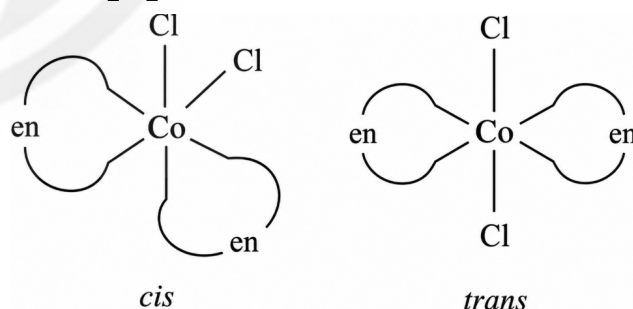
OR

The identical radii of Zirconium (Zr) and Hafnium (Hf).

2. The separation of lanthanoids in pure state becomes difficult.
3. Basicity of lanthanoids decreases
4. Covalent character increases.

Q33 Text Solution:

The geometrical isomeric structures of $[\text{Co}(\text{en})_2\text{Cl}_2]$ are



Six OR '6' OR

The coordination number of Cobalt in this complex is six OR '6'.

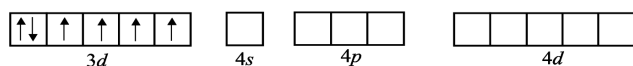


Q34 Text Solution:

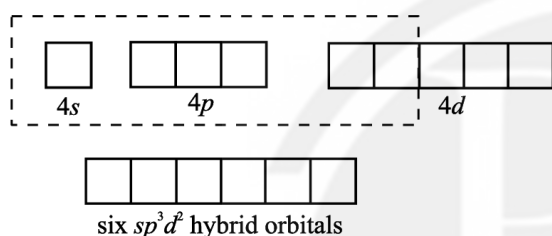
In this complex, the oxidation state of Cobalt is +3.

F^- ion provides a weak ligand field.

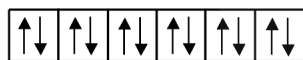
The electronic configuration of Cobalt in +3 oxidation state is $[Ar]3d^6 4s^0$.



one $4s$, three $4p$ and two outer $4d$ -orbitals hybridised to yield six sp^3d^2 hybrid orbitals pointing towards the six corners of an octahedron.



These hybridised orbitals of Co^{3+} ion overlap with orbitals of F^- ligands and forms six coordinate bonds between Co^{3+} and F^- ligand. Six sp^3d^2 hybrid orbitals with six pairs of electrons from F^- ligands:



Thus, the complex has octahedral geometry. This complex is paramagnetic due to presence of unpaired electrons.

Hybridisation: sp^3d^2 ;

Geometry: Octahedral;

Magnetic property: Paramagnetic due to presence of unpaired electrons.

Q35 Text Solution:

Complexes in which the central metal atom or ion is bound to more than one kind of donor groups or ligands are called heteroleptic complexes.

Example: $[Pt(NH_3)_2Cl_2]$, $[Co(NH_3)_4Cl_2]^+$, $[NiCl_2(H_2O)_4]$, $[Co(NH_3)_3(NO_2)_3]$

(Any one correct example)



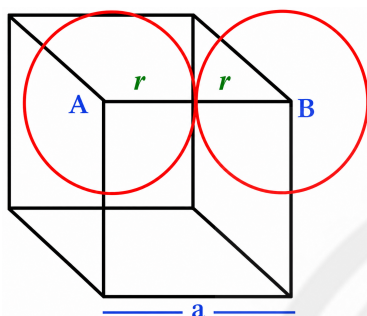
Q36 Text Solution:

(a) The edge length or side of the cube 'a' and the radius of each sphere (particle) 'r' are related as $a = 2r$

$$\text{Total volume of the unit cell} = a^3 = (2r)^3 = 8r^3$$

Since a simple cubic unit cell contains only 1 atom.

$$\text{The volume of one sphere} = \frac{4}{3}\pi r^3$$



(b) BCC unit cell contains 8 corner atoms and 1 atom at the body centre.

Contribution of corner atom to the unit cell is $\frac{1}{8}$

Contribution of body atom to the unit cell is 1

Total number of particles (atoms) per unit cell in BCC = $(8 \times \frac{1}{8}) + (1 \times 1) = 1 + 1 = 2$ atoms.

OR

Number of particles (atoms) per unit cell in BCC =

= 8 particles at the corners + 1 particle at body centred atom

$$= (8) + (1 \times 1)$$

$$= 1 + 1 = 2 \text{ atoms.}$$

Q37 Text Solution:

$$(a) M_2 = \frac{1000 \times k_b \times W_2}{\Delta T_b \times W_1} \quad \text{OR} \quad M_B$$

$$= \frac{1000 \times k_b \times W_B}{\Delta T_b \times W_A}$$

$$M_2 = \frac{1000 \times 0.51 \times 3.46}{0.12 \times 100}$$

$$M_2 = 147.05 \text{ g mol}^{-1}$$

(b) +ve deviation OR Positive deviation from Raoult's law.

Because

1. Force of attraction between ethanol and acetone molecules is less than that of ethanol - ethanol & acetone - acetone molecules.
2. Attractive Force between A - B molecules is less than that of A - A and B - B molecules.
3. $F_{A-B} < F_{A-A}$ and F_{B-B}
4. In pure ethanol molecules are hydrogen bonded. On adding acetone, its molecules get in between the ethanol molecules and break hydrogen bonds between them.
5. The ethanol-acetone shows weaker interaction than pure ethanol-ethanol interaction.

Q38 Text Solution:

(a)

$$E^0_{(\text{cell})} = E^0(\text{Cu} + 2/\text{Cu})$$

$$- E^0(\text{Mg}^{2+} / \text{Mg}) = +0.34 \text{ V} - (-2.37 \text{ V})$$

$$= +2.71 \text{ V}$$

$$\Delta G^0 = -nFE^0_{\text{cell}}$$

$$\Delta G^0 = -2 \times 96487 \times 2.71 = -522959 \text{ J} =$$

$$-522.95 \text{ KJ} = -523 \text{ KJ}$$

(b) Methods to prevent corrosion of iron:

1. Painting.
2. Applying grease or oil (Lubrication).
3. Galvanisation by zinc (Sacrificial protection).
4. Surface is coated with non-corroding metals like Ni or Cr or Al etc...
5. Cathodic protection (Electrical protection).
6. Using anti rust solution.
7. Tinning: iron surface is coated with tin.

Q39 Text Solution:

(a) Consider a zero-order reaction, $R \rightarrow P$

$$\text{Rate} = -\frac{d[R]}{dt} = k[R]^0$$

Where 'k' is rate constant of a zero order reaction

$$\therefore -\frac{d[R]}{dt} = k[R]^0$$

$$-\frac{d[R]}{dt} = k \times 1$$

$$d[R] = -k[dt]$$



Integrate on both sides;

We get $[R] = -kt + I \dots (i)$ where I or $C =$

Integration constant

When $t = 0$ then $[R] = [R]_0$; Where $[R]_0 =$

Initial concentration of the reactant

Equation (i) becomes,

$$[R]_0 = -k \times 0 + I$$

$$[R]_0 = I$$

Substituting value of 'I' in equation (i), $[R] = -kt + [R]_0$

$$k = \frac{[R]_0 - [R]}{t}$$

(b) Factors influence the rate of the reaction:

1. Temperature.
2. Catalyst.
3. Concentration of Reactants.
4. Nature of Reactants.
5. Pressure (in case of Gaseous reactants).

Q40 Text Solution:

(a) The collision which results in a chemical reaction. OR

The collision in which molecules collide with sufficient kinetic energy and proper orientation, to facilitate breaking of bonds between reacting species and formation of new bonds to form products are called effective collision.

Two factors responsible for effective collision are:

(i) Activation energy (E_a).

(ii) Proper orientation of reactant molecules.

(b) Rate constant for the first order reaction is

$$k = \frac{2.303}{t} \log \frac{[R]_0}{[R]}$$

When $t = t_{1/2}$ then $[R] = [R_0]/2$

$$\therefore k = \frac{2.303}{t_{1/2}} \log \frac{[R]_0}{[R]_0/2}$$

$$t_{1/2} = \frac{2.303}{k} \log 2$$

$$t_{1/2} = \frac{0.693}{k}$$

This above relation shows the half-life

period 1 - order reaction is independent of initial concentration of reacting species $[R]_0$.

Q41 Text Solution:

(a)

Lyophilic Colloids	Lyophobic Colloids
They have more affinity towards the medium.	They have little or no affinity towards the medium.
These are reversible sols.	These are Irreversible sols.
They are more Stable	They are less Stable
The particles are solvated	The particles are not solvated
They may or may not carry charge.	They carry charge.
They cannot coagulate easily.	They can coagulate easily.
Viscosity is more than that of medium.	Viscosity is almost same as the medium.

(b) Freundlich adsorption isotherm :

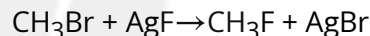
$$\frac{x}{m} = k \times p^{\frac{1}{n}} \text{ where } n > 1$$

$$1/n = 0 \text{ or zero}$$

Q42 Text Solution:

(a) When alkyl chloride/bromide (chloro or bromoalkene) on heating in the presence of metallic fluoride such as AgF , Hg_2F_2 , CoF_2 , or SbF_3 gives alkyl fluorides or Fluoroalkanes. OR

Alkyl chloride/ bromide (chloro or bromoalkene) reacts with AgF gives alkyl fluoride or Fluoroalkanes.



(b) Organo-magnesium halides OR Alkyl/ Aryl magnesium halides are called Grignard reagents.

General formula: $\text{R} - \text{Mg} - \text{X}$ OR

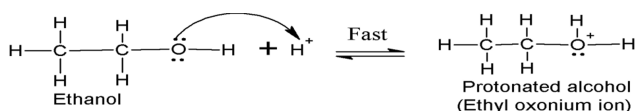


(c) Phosgene OR COCl_2

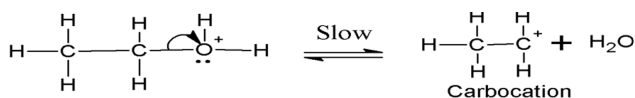


Q43 Text Solution:

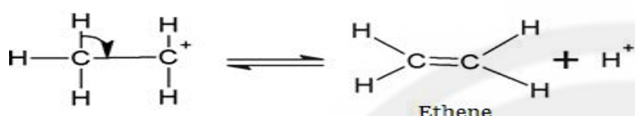
(a) Step 1: Formation of protonated alcohol:



Step 2: Formation of carbocation:



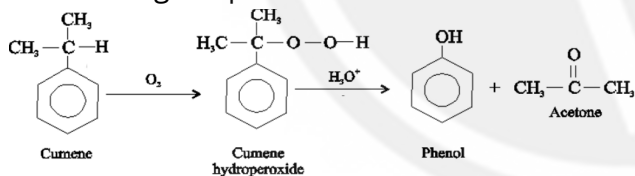
Step 3: Elimination of proton:



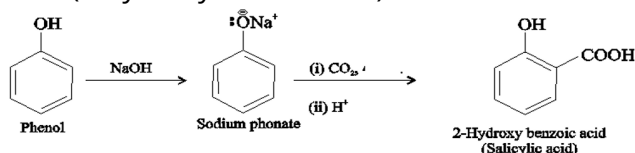
(b) Lucas reagent is mixture of anhydrous Zinc chloride (ZnCl_2) and conc. HCl . Primary Alcohol

Q44 Text Solution:

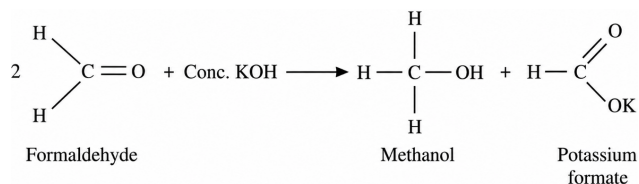
(a) When cumene (isopropyl benzene) is oxidised in the presence of air, it gives cumene hydroperoxide which on acidification with dilute acid gives phenol.



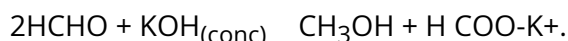
(b) Phenol reacts with NaOH (sodium hydroxide) give phenoxide ion (Sodium phenate), which reacts with carbon dioxide (CO_2) gas in acidified medium gives salicylic acid (2-hydroxybenzoic acid).

**Q45 Text Solution:**

(a) Formaldehyde reacts with Conc. KOH to form methyl alcohol (methanol) and potassium formate.

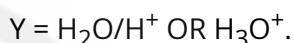


OR



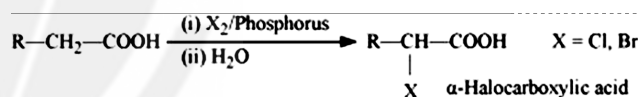
Cannizzaro Reaction

(b) $\text{X} = \text{Chromyl chloride } (\text{CrO}_2\text{Cl}_2)$

**Q46 Text Solution:**

(a) Carboxylic acids containing α - hydrogen atom.

Carboxylic acids having an α -hydrogen on treated with chlorine or bromine in the presence of red Phosphorus gives α -halocarboxylic acid.



OR Any suitable example

(b) Acetic acid is weaker acid.

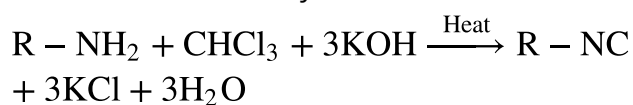
Due to positive inductive effect OR

Due to +I effect OR

Electron donating $-\text{CH}_3$ group decreases the acidity in acetic acid.

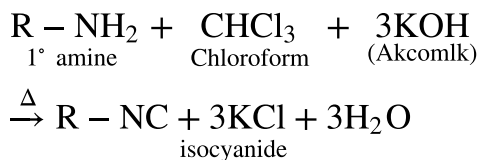
Q47 Text Solution:

(a) primary amines on heating with chloroform and ethanolic KOH (potassium hydroxide) gives isocyanides or carbylamines. This reaction is called carbylamine reaction.



OR



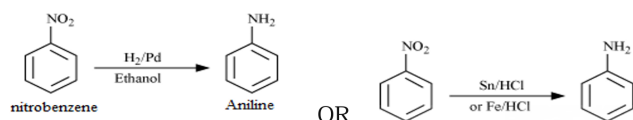


OR Any suitable example

(b) Nitrobenzene is reduced to give aniline by passing hydrogen gas in the presence of finely divided nickel, palladium, or platinum

OR

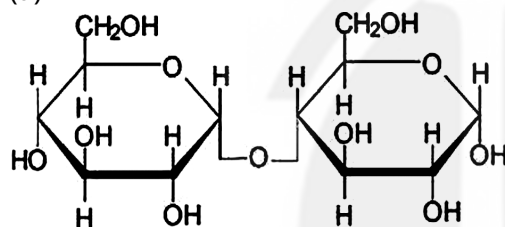
By reducing with tin (Sn) and conc. HCl OR Fe and Conc. HCl.



(c) N, N - Dimethylmethanamine.

Q48 Text Solution:

(a)



(b) Polysaccharides are the carbohydrates which on hydrolysis give more than ten (many) monosaccharide units.

Example: Starch, cellulose, glycogen, gums etc.

(c) Vitamin A, D, E and K

Q49 Text Solution:

(a) Fibrous proteins have fibre (Hair) like structure and insoluble in water.

Keratin (present in hair)

(b) Insulin & Glucagon

(c) Thymine

Q50 Text Solution:

(a) Hexamethylene diamine and Adipic acid.

(b) Heating a mixture of raw (natural) rubber with sulphur and an additive at 373K to 415K to make it hard and stiff is called vulcanisation.

OR

The process of heating natural rubber with calculated amount of sulphur or sulphur compounds at 373K to 413K to make it hard and tough is called vulcanisation.

(c) PHBV (Poly β - hydroxyburate - co- β - hydroxy valerate)



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