

QUESTION BANK
CHEMISTRY
CLASS-- XII

CHAPTER-1

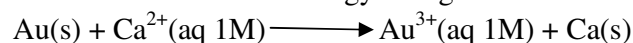
- Q.1** Why is Frenkel defect not found in pure alkali metal halides?
- Q.2** Although Si is an insulator, then how does it behave as semiconductor upon heating ?
- Q.3** In the mineral 'Spinel' having the formula $MgAl_2O_4$, oxide ions are in ccp arrangement,
(a) What percentage of tetrahedral void is occupied by Mg^{2+} ions?
(b) What percentage of octahedral void is occupied by Al^{3+} ions ?
- Q.5** A compound is formed by two elements M and N. The element N forms ccp structure and atoms of M occupy 1/3rd of tetrahedral voids. What is the formula of the compound ?
- Q.6** Ionic solids, which have anionic vacancies due to metal excess defect develop colour. Explain with the help of a suitable example.
- Q.7** The edge length of unit cell of a metal having molecular weight 75g/mol is 5Å which crystallises in cubic lattice. If the density is 2 g cm^{-3} , then find the radius of the metal atom ($N_A = 6 \times 10^{23}$). Give the answer in pm.
- Q.8** How will you distinguish between the following?
(i) Hexagonal close packing and cubic close packing.
(ii) Crystal lattice and unit cell.
(iii) Tetrahedral void and octahedral void.
- Q.9** (i) What type of substances exhibit antiferromagnetism?
(ii) How does doping of NaCl with $SrCl_2$ changes its structure?
(iii) Some of the glass objects recovered from ancient monuments look milky instead of being transparent.
- Q.12** (a) Explain the following giving suitable examples :
(i) Mode of conduction in n -type semiconductors and p -type semiconductors.
(ii) Anisotropy in crystalline solids.
(b) Calculate the packing fraction in fcc structures.
(c) In terms of band theory, what is the difference between a conductor and an insulator?

CHAPTER-2

- Q.1** Why 1M aqueous solution of a solute is more concentrated than the 1m aqueous solution of same solute?
- Q.2** Why ethyl alcohol and water cannot be separated into pure components by fractional distillation?
- Q.3** The V.P. of pure water at $20^{\circ}C$ is 17.5mm of Hg. A solution of sucrose is prepared by dissolving 68.4g of sucrose in 1000g of water. Calculate the V.P. of the solution.
- Q.4** On mixing chloroform and acetone, a reduction in total volume occurs. What type of deviations from ideal behavior for solutions is shown in this case and why?
- Q.5** Addition of HgI_2 to aq. KI solution shows an increase in V.P. why?
- Q.6** Why do aquatic species feel more comfortable in the lakes in winter than in summer?
- Q.7** (a) Which aqueous solution has higher concentration 1 molar or 1 molar solution of the same solute? Give reason.
(b) 0.5g KCl was dissolved in 100g water and the solution originally at $20^{\circ}C$, froze at $-24^{\circ}C$. Calculate the percentage ionisation of salt. K_f per 1000g of water = 1.86 K.
- Q.8** 4% NaOH and 6% urea (both w/r) are equimolar but not isotonic. Explain.
- Q.9** Arrange the following in increasing order of freezing point :
0.2 M NaOH, 0.2 M Na_2CO_3 , 0.1 M $AgNO_3$, 0.1M $(NH_4)_2SO_4$.
- Q.10** A 0.1539 molar aqueous solution of cane sugar (mol. mass = $342g\text{mol}^{-1}$) has an *f.pt.* of 271K. What will be *f.pt.* of an aqueous solution containing 5g of glucose (molar mass = $180g\text{mol}^{-1}$) per 100g of solution? (*f.pt.* of H_2O = 273.15K)

CHAPTER-3

- Q.1** Find the charge in coulombs on 1g-ion N^{-3} .
- Q.2** Why blocks of Mg are often strapped to steel hulls of ocean going ships?
- Q.3** (a) Calculate the standard free energy change for the following reaction at 25°C:



$$E^\circ \text{Au}^{3+} | \text{Au} = +1.50 \text{ V}$$

$$E^\circ \text{Ca}^{2+} | \text{Ca} = -2.87 \text{ V}$$

Predict whether the reaction will be spontaneous or not at 25°C.

- (b) The conductivity of 0.001 M acetic acid is $4 \times 10^{-5} \text{ S/cm}$. Calculate the dissociation constant of acetic acid, if \wedge_m° for acetic is $390.5 \text{ S cm}^2 / \text{mol}$.
- Q.4** Can a copper spoon be used to stir a solution of ZnSO_4 ? Support your answer with reason.
Given : $E^\circ_{\text{Cu}^{2+}/\text{Cu}} = +0.34 \text{ V}$, $E^\circ_{\text{Zn}^{2+}/\text{Zn}} = -0.76 \text{ V}$
- Q.5** Why is it that Al metal cannot be obtained by the electrolysis of an aqueous solution of a salt of Al?
- Q.6** An electrochemical cell stops working after sometime. Why ?
- Q.7** 0.05 M NaOH solution offered a resistance of 31.6 ohm in a conductivity cell at 298 K. If the cell constant of the conductivity cell is 0.367 cm^{-1} , calculate molar conductivity of NaOH solution.
- Q.8** What do you mean by E.M.F. of a cell? Calculate the E.M.F. of the cell:
 $\text{Mg(s)} | \text{Mg}^{2+} (0.2\text{M}) || \text{Ag}^+ (1 \times 10^{-3} \text{ M}) | \text{Ag(s)}$, $E^\circ_{\text{Ag}^+/\text{Ag}} = 0.80 \text{ V}$, $E^\circ_{\text{Mg}^{2+}/\text{Mg}} = -2.37 \text{ V}$
What will be the effect on E.M.F., if con. Of Mg^{2+} is decreased to 0.1M?
- Q.9** At 298 K, the molar conductivities at infinite dilution of NH_4Cl , NaOH and NaCl are 129.8, 217.4 and $108.9 \text{ ohm}^{-1} \text{ cm}^2 \text{ mol}^{-1}$ respectively. If the molar conductivity of centinoram solution of NH_4OH is $9.33 \text{ ohm}^{-1} \text{ cm}^{-1}$ Calculate the equilibrium constant.
- Q.10** (a) Explain why electrolysis of aqueous NaCl solution liberates H_2 gas at cathode and Cl_2 gas at anode. $(E^\circ_{\text{Na}^+/\text{Na}} = -2.71 \text{ V}, E^\circ_{\text{H}_2\text{O}/\text{H}_2} = -0.83 \text{ V}, E^\circ_{\text{Cl}_2/2\text{Cl}^-} = +1.36 \text{ V}, E^\circ_{\text{H}^+/\text{O}_2/\text{H}_2\text{O}} = 1.23 \text{ V})$
- (b) Explain with the help of a diagram the effect of change in concentration of solution on molar conductivity of :
(i) a weak electrolyte, (ii) a strong electrolyte.
- (c) A current of one ampere is flowing through a wire . calculate the number of electrons flowing through the cross-section of the wire per second.

CHAPTER-4

Q.1 The reaction $2\text{Na}(g) + \text{Cl}_2(g) \rightarrow 2\text{NaCl}$ was studied at -10°C and the following data were obtained:

Expt. No.	[Na]	[Cl ₂]	Initial rate of formation of NaCl (mol/L/min)
1.	0.10	0.10	0.18
2.	0.10	0.20	0.35
3.	0.20	0.20	1.45

- (a) What is the order of reaction with respect to Na and with respect to Cl₂?
 (b) Write the rate law.
- Q.2** For a first order of reaction, it takes 5 min for the initial conc. Of 0.6mol/L to be come 0.4mol/L. How many long will it take for the initial conc. To become 0.3mol/L.
- Q.3** The rate of a particular reaction doubles when temp changes from 27°C to 37°C. Calculate the energy of activation for such a reaction.
- Q.4** (i) Explain integrated rate law and derive it for first order reaction.
 (ii) Why coal does not burn by itself in air but once initiated by flame, it continues to burn?
- Q.5** The rate constant 'k' for a first order reaction $A \rightarrow B$ is 5 min^{-1} . In another reaction $C \rightarrow D$, it is found that time taken for 10% of decomposition of C is equal to 50% decomposition of A in first reaction. Find rate constant for second reaction.
- Q.6** For the reaction $2A + b \rightarrow A_2B$ the rate $= k[A][B]^2$ with $k = 2.0 \times 10^{-6}\text{ mol}^{-2}\text{L}^2\text{ s}^{-1}$. Calculate the initial rate of the reaction when $[A] = 0.1\text{ mol L}^{-1}$, $[B] = 0.2\text{ mol L}^{-1}$. Calculate the rate of reaction after $[A]$ is reduced to 0.006 mol L^{-1} .
- Q.7** The decomposition of NH₃ on platinum surface is zero order. What are the rates of production of N₂ and H₂ if $k = 2.5 \times 10^{-4}\text{ mol}^{-1}\text{ L s}^{-1}$?
- Q.8** Consider the reaction $A \rightarrow P$. The change in concentration of A with time is shown in the following plot:
 (i) Predict the order of the reaction.
 (ii) Derive the expression for the time required for 99.99% completion of the reaction.
- Q.9** what will be the relation between rate constant k_1 and k_2 of a first order reaction when temperature changes from 280 K to 300 K and activation energy is zero?
- Q.10** Two reactions have identical value of E_a . Does this mean that they have same rate constant if run at the same temperature? Explain.

CHAPTER-5

- Q.1** Bleeding caused by a nick from a razor during shaving can be stopped by rubbing Explain.
- Q.2** In which of the following does adsorption take place and why ?
(i) Silica gets placed in the atmosphere saturated with water.
(ii) Anhydrous CaCl_2 placed in the atmosphere saturated with water.
- Q.3** Explain the following observations:
(a) Ferric hydroxide sol. Gets coagulated on addition of sodium chloride solution.
(b) Cottrell's smoke precipitator is fitted at the mouth of the chimney used in factories.
(c) Physical adsorption is multilayered, while chemisorptions is monolayered.
- Q.4** Arrange $\text{N}_2, \text{CO}, \text{CH}_4$ in the increasing order of adsorption on the surface of activated charcoal given that their critical temperatures are 126, 124, 190 K respectively.
- Q.5** The coagulation of 100 mL of colloidal sol. is completely prevented by adding 0.25g of a protective colloid 'A' to it before adding 1 mL of NaCl solution. Determine the gold number of A.
- Q.6** Why are medicines more effective in colloidal state?
- Q.7** What is CMC?
- Q.8** In Chemisorption, when we increase the temperature, the rate of adsorption first increases and then decreases. Why it is so?
- Q.9** Explain Hardy Schulze law. Write the following compound in increasing order of their coagulating power for As_2S_3 sol:
 $\text{NaCl}, \text{AlCl}_3, \text{Ba}(\text{OH})_2$
- Q.10** Explain:
(i) Delta is generally formed when river meets the ocean.
(ii) Ferric hydroxide solution is more readily coagulated by Na_3PO_4 in comparison to KCl.

CHAPTER-6

- Q.1** What is the significance of leaching in the extraction of aluminium?
- Q.2** What is the role of depressant in froth floatation process?
- Q.3** Out of C of CO, which is a better reducing agent of 673 K?
- Q.4** State the role of silica in the metallurgy of copper?
- Q.5** How is 'cast iron' different from 'pig iron'?
- Q.6** Copper can be extracted by hydrometallurgy but not zinc. Explain.
- Q.7** Why is the extraction of copper from its pyrite difficult than that from its oxide through reduction?
- Q.8** Write the chemical reactions which take place in different zone in the blast furnace during the extraction of iron.
- Q.9** Outline the principles of refining of metals by following methods:
(i) Zone refining (ii) Electrolytic refining
- Q.10** How the ore is concentrated by froth floatation process? What is the role of stabilizer and of a depressant? Give one example of each.
- Q.11** (i) Distinguish between flux and slag.
(ii) Which metals are generally extracted by the electrolytic processes? What positions these metals generally occupy in the periodic table?
- Q.12** (i) Discuss the extraction of copper from cuprous oxide or copper (I) oxide.
(ii) What is the main difference between cupellation and poling?
(iii) Why is it advantageous to roast a sulphide ore to the oxide before reduction?

CHAPTER-7

- Q.1** Why ICl is more reactive than I₂?
- Q.2** NF₃ is an exothermic compound but NCl₃ is an endothermic compound, why?
- Q.3** Complete the reaction: $HNO_3 \xrightarrow{P_4O_{10}/heat}$
- Q.4** On being slowly passed through water, NH₃ dissolves but PH₃ forms bubbles. Why?
- Q.5** Draw the structure of XeO₃.
- Q.6** (i) Bond angle in PH₄⁺ is higher than in PH₃. Why?
- Q.7** Complete :
- (i) NH₃ + NaOCl → (ii) XeF₄ + SbF₅ →
- Q.8** Oxygen exhibits only -2 oxidation state while other members of this family show + 4 and +6 oxidation state as well. Explain why is it so?
- Q.9** How is H₂SO₄ manufactured by Contact process? How does it react with:
- (i) phosphorus? (ii) NaBr?
- Q.10** (i) Give the resonating structures of NO₂ and N₂O₅.
(ii) Write the main difference between the properties of white and red phosphorus.
- Q.11** (i) Explain why fluorine form only one oxoacid(HOF).
(ii) Why are halogens strong oxidizing agents?
(iii) How is SO₂ an air pollutant?
- Q.12** (i) PCl₅ is ionic in nature in the solid state. Give reasons.
(ii) How are XeO₃ and XeOF₄ prepared?
(iii) What are interhalogen compounds? Give example.

CHAPTER-8

Q.1 Give reasons:

- (i) Transition metals tend to be unreactive with increasing atomic numbers in a series.
- (ii) The largest number of oxidation states are exhibited by the elements in the middle of the first row transition elements.
- (iii) Transition elements show similarity in properties along a period and down the group.

Q.2 (a) Out of Ag_2SO_4 , CuF_2 , MgF_2 and CuCl , which compound will be coloured and why?

(b) Explain:

- (i) CrO_4^{2-} is a strong oxidizing agent whereas MnO_4^{2-} is not.
- (ii) Zr and Hf have identical sizes.
- (iii) $\text{La}(\text{OH})_3$ is more basic than $\text{Lu}(\text{OH})_3$.
- (iv) KMnO_4 is a stronger oxidizing agent in the acidic medium than in the alkaline medium.

Q.3 (a) In the titration of FeSO_4 with KMnO_4 in the acidic medium, why is dil. H_2SO_4 used instead of dil. HCl ?

(b) Give reasons :

- (i) Mn^{+2} compounds are more stable than Fe^{+2} towards oxidation to +3 state.
- (ii) Ce^{4+} is used as an oxidizing agent in volumetric analysis.
- (iii) Transition metals form a number of interstitial compounds.
- (iv) Zn^{2+} salt are white while Cu^{2+} salt are blue.

Q.4 (a) A blackish brown coloured solid 'A' when fused with alkali metal hydroxide in presence of air, produces a dark green coloured compound 'B' which on electrolytic oxidation in alkaline medium gives a dark purple coloured compound C. Identify A, B and C and write the reactions involved.

(b) What happens when an acidic solution of the green compound (B) is allowed to stand for sometime? Give the equation involved. What is this type of reaction called?

Q.5 How is the variability in oxidation state of transition metals different from that of the non transition metals? Illustrate with examples.

Q.6 Give examples and suggest reasons for the following features of the transition metal chemistry :

- (i) The lowest oxide of transition metal is basic, the highest is amphoteric/acidic.
- (ii) A transition metal exhibits highest oxidation state in oxides and fluorides.
- (iii) The highest oxidation state is exhibited in oxoanions of a metal.

Q.7 Name the members of the lanthanoid series which exhibit + 4 oxidation states and those which exhibit +2 oxidation states. Try to correlate this type of behavior with the electronic configuration of these elements.

Q.8 Comment on the statement that elements of the first transition series possess many properties different from those of heavier transition elements.

Q.9 What happens when:

- (i) $\text{K}_2\text{Cr}_2\text{O}_7$ reacts with an acidified solution of FeSO_4 ?
- (ii) KMnO_4 reacts with an acidified solution of KI ?

- Q.10** (a) How would you prepare $K_2Cr_2O_7$ from chromite ore on large scale and how would you convert the following?
 (i) HCl into Cl_2 (ii) KNO_3
 (b) What happens when Cerium
 (i) burns in O_2 ? (ii) heated with C?

CHAPTER-9

- Q.1** What do you mean by the denticity of a ligand? Give an example of a bidentate ligand.
Q.2 Find the oxidation number of the metal in the following coordination entity :
 $[Co(CN)(H_2O)(en)_2]^{2+}$
Q.3 Using IUPAC system, write the formula of the following compound:
 Potassium trioxalatochromate (III)
Q.4 Drawn the structures of optical isomers of $[Cr(ox)_3]^{3-}$.
Q.5 What do you mean by crystal field splitting energy?
Q.6 Explain ionization isomerism with example.
Q.7 Example on the basis of valence bond theory, the experimental findings that $[Ni(CN)_4]^{2-}$ ion with a square planar structure is diamagnetic and the $[NiCl_4]^{2-}$ ion with tetrahedral geometry is paramagnetic.
Q.8 Discuss the role of coordination compounds in:
 (a) Analytical Chemistry (b) Biological System
Q.9 (i) Write the IUPAC name of linkage isomer of:
 (a) $[Co(NH_3)_5NO_2]Cl_2$ (b) $[Cr(H_2O)_5(SCN)]^{2+}$
 (ii) What are inner orbital complex? Give example.
Q.10 (i) How many isomers are possible for the complex $[Pt(H_2O)Cl(NH_3)Br]$?
 Draw them.
 (ii) Which isomer of $[CoCl_2(en)_2]^+$ does not show optical isomerism?
Q.11 (i) Using the valence bond theory, predict the shape and magnetic character of $[Fe(CN)_6]^{3-}$ ion.
 (ii) $[Ag(NH_3)_2]^+ Cl^-$ is colourless in aqueous solution and why? (At. No. of Ag = 47)
Q.12 (i) Why is $[Ni(CO)_4]$ not show Geometrical isomerism?
 (ii) $K_4[Fe(CN)_6]$ is less stable than $K_3[Fe(CN)_6]$. Example.
 (iii) A coordination compound has formula $CoCl_3 \cdot 4NH_3$. it does not liberate ammonia but precipitates chloride ion as $AgCl$. Give the IUPAC name of the complex and write its structural formula.

CHAPTER-10

- Q.1** Write the structural formula and IUPAC name of DDT.
- Q.2** Arrange the following halides in the order of increasing S_N^2 reactivity :
 $CH_3Cl, CH_3Br, CH_3CH_2Cl, (CH_3)_2CHCl$.
- Q.3** Alkyl Chloride is hydrolysed more readily than n-propyl chloride. Explain.
- Q.4** Give the uses of carbon tetrachloride.
- Q.5** What is meant by racemic mixture?
- Q.6** Write the structural formula and IUPAC name of the following .
(i) Tert-pentyl bromide (ii) Benzyl chloride
- Q.7** Write the equations for the following reactions:
(i) Sandmeyer's reaction (ii) Wurtz-Fitting reaction.
- Q.8** Distinguish between the following pair:
(i) Bromo benzene & benzyl bromide (ii) *n* Propyl alcohol & iso-propyl alcohol.
- Q.9** Give mechanism for the following reaction:
 $(CH_3)_3CBr + OH^- \rightarrow (CH_3)_3COH + Br^-$
- Q.10** How will you bring about following conversions?
(i) Chlorobenzene to phenol. (ii) iso-propyl bromide to *n*-propyl bromide
(iii) Aniline to iodo benzene.
- Q.11** Account for the following:
(i) *p* Dichlorobenzene has higher m.p. than *ortho* and *m*-isomer.
(ii) neo-pentyl bromide undergo nucleophilic substitution reactions very slowly.
(iii) Alkyl halides, though polar, are immiscible with water?
- Q.12** Predict the alkenes that would be formed by dehydrogenation of the following halides with sodium ethoxide in ethanol and identify the major alkene.
(i) 1-Bromo-1-methylcyclohexane (ii) 2-Chloro-2-methylbutane
(iii) 2, 2, 3-Trimethyl-3-bromopentane.
- Q.13** Primary alkyl halide C_4H_9Br (*a*) reacted with alcoholic KOH to give compound (*b*).
Compound (*b*) is reacted with HBr to give (*c*) which is an isomer of (*a*). When (*a*) was reacted with Na metal, it gave a compound (*d*) C_8H_{18} which is different from the compound formed when *n*-butyl bromide is reacted with sodium. Give the structural formula of (*a*) and write the equation for all the reactions.

CHAPTER-11

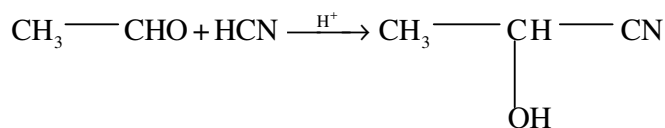
- Q.1** Phenol is an acid but does not react with sodium bicarbonate solution. Why?
- Q.2** While separating a mixture of ortho-and para nitrophenols by steam distillation, name the isomer which will be steam volatile? Give reasons.
- Q.3** Predict the product of the reaction
- $$(\text{CH}_3)_3\text{C} - \text{O} - \text{C}_2\text{H}_5 \xrightarrow{\text{HI}}$$
- Q.4** Diethyl ether does not react with sodium. Explain.
- Q.5** *ortho*-nitrophenol is more acidic than *ortho*-methoxyphenol. Why?
- Q.6** Write the structural formula & IUPAC name of following compounds :
- (i) neo-Pentyl bromide (ii) methyl *tert*-butyl ether
- Q.7** Write the equations involved in the following reactions
- (i) Hydroboration oxidation (ii) Reimer-Tiemann reaction
- Q.8** Write the mechanism of hydration of ethene to form ethanol.
- Q.9** How are the following conversions carried out?
- (i) Propene \rightarrow Propan-2-ol. (ii) Methyl Magnesium bromide \rightarrow 2-Methylpropan-2-ol.
- Q.10** Write the reactions of ethyl alcohol with sulphuric acid under different conditions.
- Q.11** Give two reactions that show the acidic nature of phenol. Compare acidity of phenol with that of ethanol.
- Q.12** State tests to distinguish between the following pairs of compounds.
- (i) phenol and Ethanol (ii) pentan-2-ol and pentan-3-ol
- Q.13** How will you bring about the following conversions :
- (i) Phenol to Aspirin (ii) Aniline to phenol (iii) Phenol to Anisole.

CHAPTER-12

- Q.1** How is acetone obtained from ethyl alcohol?
- Q.2** Out of acetophenone and benzophenone, which gives iodoform test? Write reaction involved.
- Q.3** There are two —NH_2 group in semicarbazide. However, only one is involved in the formation of semicarbazone. Why?
- Q.4** Write the structure of product of the reaction



- Q.5** Give two uses of formaldehyde.
- Q.6** Explain the following with a suitable example.
 (i) Wolff-Kishner reduction. (ii) Cannizzaro reaction.
- Q.7** Write the structural formula and IUPAC name of the following:
 (i) Di-isopropylketone (ii) Lactic acid
- Q.8** Give reason for the following:
 (i) Aldehydes are more reactive than ketones towards nucleophilic reactions.
 (ii) pK_a value of acetic acid is higher than pK_a value of chloroacetic acid.
- Q.9** Convert
 (i) Acetic acid into propionic acid. (ii) Toluene into Benzaldehyde.
- Q.10** How will you convert ethanol into the following compounds:
 (i) But-2-enoic acid (ii) 2-hydroxy propanoic acid (iii) Butan-2-ol
- Q.11** Give chemical tests to distinguish between the following pairs of compounds.
 (i) Phenol and benzoic acid (ii) Acetaldehyde and Acetone
 (iii) Pentan-2-one and Pentan-3-one.
- Q.12** (a) Arrange the following compounds in the increasing order of their property indicated.
 (i) Benzoic acid, 4-nitro benzoic acid, 3,4-dinitrobenzoic acid, 4-methoxy benzoic acid (acid strength).
 (ii) $\text{CH}_3\text{—CH}_2\text{—CH}_2\text{—CHO}$, $\text{CH}_3\text{—CH}_2\text{—CH}_2\text{—CH}_2\text{—OH}$, $\text{H}_5\text{C}_2\text{—O—C}_2\text{H}_5$, $\text{CH}_3\text{—CH}_2\text{—CH}_2\text{—CH}_3$ (boiling points)
- (b) Propose the mechanism for the following reaction.



- Q.13** An organic compound (A) with molecular formula $\text{C}_8\text{H}_8\text{O}$ form an orange-red precipitate with 2,4-DNP reagent and gives yellow precipitate on heating with iodine in the presence of sodium hydroxide. If neither reduces Tollen's or Fehlings' reagent, nor does it decolourise bromine water or Baeyer's reagent. On drastic oxidation with chromic acid, it gives a carboxylic acid (B) having molecular formula $\text{C}_7\text{H}_6\text{O}_2$. Identify the compounds (A) and (B) and explain the reactions involved.

CHAPTER-13

- Q.1** What is a zwitter ion?
- Q.2** Why aromatic primary amines cannot be prepared by Gabriel phthalimide synthesis?
- Q.3** Mention two important uses of sulphanilic acid .
- Q.4** How will you convert aniline into fluorebenzene.
- Q.5** Arrange the following in decreasing order of their basic strength:
 $C_6H_5NH_2, C_2H_5NH_2, (C_2H_5)_2NH, NH_3$
- Q.6** Give the structural formulae and IUPAC names of the following compounds:
(i) N, N-diethyl butyl amine. (ii) Allyl amine.
- Q.7** Write short notes on the following:
(i) Coupling reaction (ii) Gabriel phthalimide synthesis
- Q.8** Give the structures of A, B and C in the following reactions:
(i) $CH_3CH_2I \xrightarrow{NaCN} A \xrightarrow[\text{Partial hydrolysis}]{OH^-} B \xrightarrow{NaOH+Br_2} C$
(ii) $C_6H_5NO_2 \xrightarrow{Fe/HCl} A \xrightarrow[273\text{ K}]{NaNO_2/HCl} B \xrightarrow{H_2O/H^+} C$
- Q.9** Arrange the following:
(i) In decreasing order of the pK_b value:
 $C_2H_5NH_2, C_6H_5NHCH_3, (C_2H_5)_2NH$ and $C_6H_5NH_2$
(ii) Increasing order of boiling points:
 $C_2H_5OH, (CH_3)_2NH, C_2H_5NH_2$
- Q.10** How will you convert:
(i) Methyl amine into ethylamine (ii) Aniline into p -bromo aniline
(iii) Aniline into 1, 3, 5-tribromobenzene.
- Q.11** Account for the following:
(i) Although amino group is o - and p -directing in aromatic electrophilic substitution reactions, aniline on nitration gives a substantial amount of m -nitroaniline.
(ii) Aniline does not undergo Friedel-Craft's reaction.
(iii) Ethylamine is soluble in water, whereas aniline is not.
- Q.12** Give one chemical test to distinguish between the following pairs of compounds:
(i) Methylamine and dimethylamine (ii) Ethylamine and aniline
(iii) Aniline and benzylamine
- Q.13** An aromatic compound 'A' on treatment with aqueous ammonia and heating forms compound 'B' which on heating with Br_2 and KOH forms a compound 'C' of molecular formula C_6H_7N . Write the structures and IUPAC names of compounds A, B, C.

CHAPTER-15

- Q.1** Mention which of the following are addition polymers:
(i) Terylene (ii) Nylon-6, 6
(iii) Neoprene (iv) Teflon.
- Q.2** Arrange the following polymers in increasing order of their intermolecular forces.
Nylon 6, 6, Buna-S, Polythene.
- Q.3** What is a copolymer?
- Q.4** What is a biodegradable polymer? Give an example of a biodegradable aliphatic polyester.
- Q.5** Name a polymer used for non-stick kitchen wares. Give its method of preparation.
- Q.6** How can you differentiate between addition and condensation polymerization?
- Q.7** Write the information asked in the following polymers.
(i) Bakelite –Materials used for preparation
(ii) PVC– Monomer unite
(iii) Synthetic rubber–Monomer unite
(iv) Nylon-6,6– Materials required for preparation.
- Q.8** Briefly describe the following terms giving one example of each:
(i) Polyamides (ii) Polyesters.
- Q.9** Write equations for the synthesis of the given polymers
(i) Glyptal (ii) Teflon.
- Q.10** Example the terms copolymerization and give two example.
- Q.11** Write the names and structures of the monomers of the following polymers:
(i) Buna-N (ii) Dacron (iii) Neoprene.
- Q.12** How is Bakelite made and what are its uses? Why is bakelite a thermosetting polymer?
- Q.13** (i) How does vulcanization change the properties of natural rubber?
(ii) Why are the numbers 66 and 6 put in the name of nylon 66 and nylon 6?

CHAPTER-16

- Q.1** What are main constituents of dettol?
- Q.2** What are antagonists?
- Q.3** Name the medicine which can act as analgesics as well as antipyretic. Give its chemical name.
- Q.4** How do tranquilizers and analgesics work?
- Q.5** How do synthetic detergents differ from soaps w.r.t. the raw material used for their manufacture?
- Q.6** How do antiseptics differ from disinfectants? Give one example of each.
- Q.7** What are biodegradable and non-biodegradable detergents. Give one example of each.
- Q.8** Pick out the odd one amongst the following on the basis of their medicinal properties mentioning the reason.
- (i) Luminal, seconal, phenacetin, equanil
 - (ii) Chloroxylenol, phenol, Chloramphenicol, bithional.
- Q.9** Describe the following with suitable example
- (i) Antioxidant
 - (ii) Tranquilizer
- Q.10** (i) Name any one substance which can be used as antiseptic as well as disinfectant.
(ii) Why is bithional added to soap?
(iii) Why should aspirin not be taken on an empty-stomach.
- Q.11** (i) How do antiseptics differ from disinfectants?
(ii) Example what do you understand by spectrum of an antibiotic.
- Q.12** What are detergents ? Give their scheme of classification.
- Q.13** Define the following and give one example of each.
- (i) Antihistamine
 - (ii) Antifertility drugs
 - (iii) Antacids.
