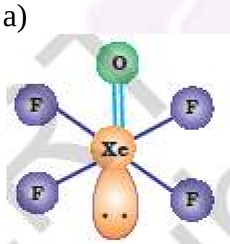
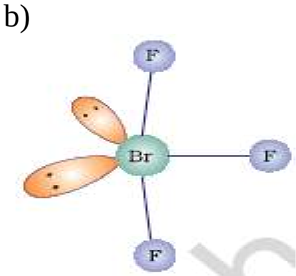
CBSE Class 12 Chemistry Question Paper Solution 2020 Set 56/1/1

56/1/1 – Set
MARKING SCHEME
Sr. SECONDARY SCHOOL EXAMINATION, 2020
Subject: CHEMISTRY

Q.No.	Expected Answer / Value Points	Distribution of Marks
SECTION - A		
1.	Racemic Mixture	1
2.	Polarimeter	1
3.	Pent-2-ene / $CH_3CH=CHCH_2CH_3$	1
4.	Antiseptic	1
5.	$CH_3I + C_6H_5OH$	1
6.	A	1
7.	Zn	1
8.	No	1
9.	$CH_2=CH\text{-}Cl$	1
10.	Branched hydrocarbon part	1
11.	B	1
12.	D	1
13.	C	1
14.	C	1
15.	A	1
16.	iii	1
17.	ii	1
18.	i	1
19.	ii	1
20.	i	1

SECTION – B		
21.	(a) The drugs which are used to control stress / anxiety / tension / mild or severe mental diseases (b) The drugs which are used to kill or to prevent the growth of micro-organism, applied externally on living tissues.	1 1
	OR	
21	Soap molecules form micelle around the oil droplet or dirt in such a way that hydrophobic part interacts with the oil droplet and hydrophilic part projects out. Micelles can be washed away on rinsing with water. Thus soap helps in emulsification and washing away of oil and fats.	2
22.	$\pi = CRT$ (Volume of solution = 100 mL) $\pi = -RT$ $\pi = -$ $\pi = 20.5$ atm. (½ mark may be deducted for no or incorrect unit)	½ ½ 1
	OR	
22.	ΔT_f (urea) = ΔT_f (Z) (or by any other correct method) (½ mark may be deducted for no or incorrect unit)	½ ½ 1
23.	(a) 1^{st} order (b) No, due to exponential relation / the curve never touches the x-axis.	1 ½ + ½
24.	a)  b)  	1 1
25.	(a) $K_2[Zn(OH)_4]$ (b) $[Pt(NH_3)_6]Cl_4$	1 1
26.	a) $(CH_3)_3C\text{-}OH$ / tertiary butyl alcohol is formed.	1

	b) $C_6H_5COCH_3$ / acetophenone is formed (or correct chemical equation)	1
27.	a) $C_6H_5OH + HCHO$, Phenol + formaldehyde b) $CH_2= C(Cl) – CH=CH_2$, Chloroprene	½ + ½ ½ + ½
	SECTION - C	
28.	(a) (A) $\rightarrow CH_3CONH_2$ (B) $\rightarrow CH_3NH_2$ (b) (A) $\rightarrow C_6H_5NH_2$ (B) $\rightarrow C_6H_5N_2Cl$ (c) (A) $\rightarrow C_6H_5CN$ (B) $\rightarrow C_6H_5COOH$	½ + ½ ½ + ½ ½ + ½
	OR	
28	a) (i) Add Ice cold ($NaNO_2$ + HCl) followed by phenol or β-Naphthol to both the compounds. Aniline forms orange red dye while ethylamine doesn't. ii) Add $CHCl_3$ and KOH (alc.) to both the compounds. Aniline gives foul smelling isocyanide while N-Methylaniline doesn't. (or any other suitable chemical test) b) Butanol > Butanmine > Butane	1 1 1
29.	(a) Because the – CHO group in glucose is involved in hemiacetal formation and thus is not free / due to cyclic structure of glucose -CHO group is not free. (b) Because the hydrogen bonds are formed between specific pairs of bases. (c) Starch is a polymer of α - glucose while cellulose is a polymer of β - glucose.	1 1 1
30.	(a) Because sulphur readily gets oxidized itself to more stable +6 state. (b) Because of absence of d-orbital in Fluorine. (c) Because size increases from Helium to Radon. / dispersion or van der Waal forces increase from Helium to Radon.	1 1 1
	OR	
30	(a) $MnO_2 + 4HCl \rightarrow MnCl_2 + Cl_2 + 2H_2O$ (b) $XeF_6 + KF \rightarrow K^+[XeF_7]^-$ (c) $4I^-_{(aq.)} + 4H^+_{(aq.)} + O_{2(g)} \rightarrow 2I_{2(s)} + 2H_2O_{(l)}$	1 1 1
31.	(a) NaCN act as a depressant. (b) SiO_2 act as a flux. / used to remove FeO as slag (c) I_2 is used to convert Ti into volatile compound (TiI_4).	1 1 1
32.	**Physisorption** / **Chemisorption** 1. It arises because of van der Waals' forces. / 1. It is caused by chemical bond formation. 2. It is not specific in nature. / 2. It is highly specific in nature. 3. It is reversible in nature. / 3. It is irreversible. (or any other correct differences)	1 x 3

33.	(a) Decreases. (b) Increases (c) Increases	1 1 1
34.	$\Delta T_f = K_f\ m$ $1.5 = \frac{3.9 \times w_B}{176} \times \frac{1000}{75}$ Mass of ascorbic acid = 5.08 g.	1 1 1
	SECTION – D	
35	(a) $E^0cell = E^o_C - E^o_A$ $= 0.34 - (-0.76)$ $= 1.10V$ $\Delta G^o = -nFE^o$ $= -2 \times 1.10 \times 96500$ $= -212300$ J/mol or -212.3 kJ/mol (b) (i) Pollution free (ii) High efficiency.	½ ½ ½ ½ 1 1 1
	OR	
35.	(a) (i) Silver wire at 30^oC because as temperature decreases, resistance decreases so conduction increases. (ii) 0.1 M CH_3COOH, because on dilution degree of ionization increases hence conduction increases. (iii)KCl solution at 50^oC, because at high temperature mobility of ions increases and hence conductance increases	1 1 1
	(b)	

Electrochemical	Electrolytic	Marks
(1) Anode -ve Cathode +ve	Anode +ve Cathode -ve	1
(2) Convert chemical Energy to electrical energy	Convert electrical Energy to chemical energy	1

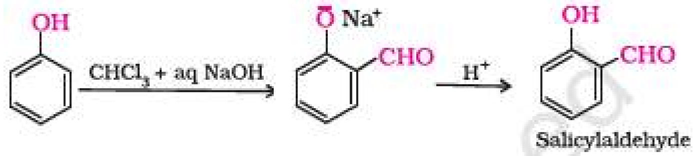
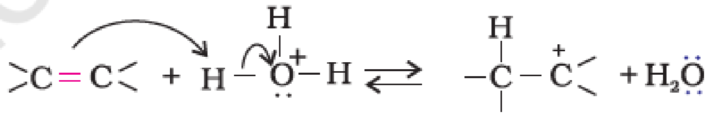
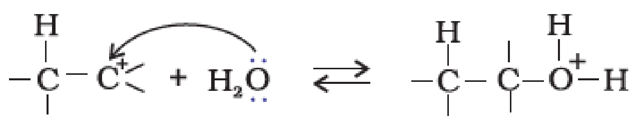
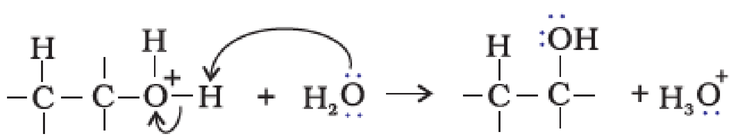
(or any other correct differences)

36.	(a) (i) $Cu^{+1}(3d^{10})$ compounds are white because of absence of unpaired electrons while Cu^{+2} $(3d^{9})$ compounds are coloured due to unpaired e^{-} / shows d-d transition. (ii) chromate (CrO_4^{2-}) changes to dichromate $(Cr_2O_7^{2-})$ ion in acidic medium. (iii)due to completely filled d-orbitals in their ground state as well as in oxidized state. (b) Co = $[Ar]4s^2 3d^7$, Co^{+2} =$[Ar]\ 3d^7$ $\mu = \sqrt{n(n+2)}$ $= \sqrt{3(3+2)} = \sqrt{15} = 3.92\ B.M.$	1 1 1 ½ + ½ ½ ½
	OR	
36.	(a)	1x3

Lanthanoids	Actinoids
(1) most of them are not radioactive	All are radioactive
(2) don't show a wide range of oxidation state	Show a wide range of oxidation states
(3) Most of their ions are colourless	Most of their ions are coloured

(or any other correct differences)

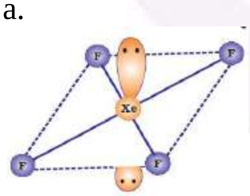
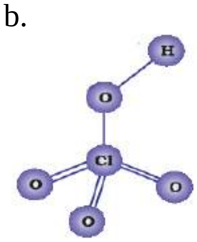
	(b) (i) Sc^{+3}, because of absence of unpaired electron.	½ + ½
	(ii) Cr, because of presence of strong intermetallic bonding than Cu.	½ + ½

37.	(a) Tert-butyl alcohol,	1
	because it forms more stable 3° carbocation than 1° carbocation.	1
	(b) i)	
		1
	ii) $(CH_3)_3CCl + NaOH_{(aq.)} \longrightarrow (CH_3)_3COH \xrightarrow{Na} (CH_3)_3CONa \xrightarrow{C_2H_5Cl} (CH_3)_3COC_2H_5$	1
	iii) $CH_3CH{=}CH_2 \xrightarrow[\text{ii) } H_2O_2/OH^-]{\text{i) } B_2H_6} CH_3CH_2CH_2OH$	1
	(or by any other suitable method)	
	OR	
37.	a)	
	Step 1: Protonation of alkene to form carbocation by electrophilic attack of H_3O^+.	
	$H_2O + H^+ \rightarrow H_3O^+$	
		1
	Step 2: Nucleophilic attack of water on carbocation.	
		½
	Step 3: Deprotonation to form an alcohol.	
		½
	b) i) $K_2Cr_2O_7 + H_2SO_4$ / $Na_2Cr_2O_7 + H_2SO_4$	1
	ii) Br_2 in CH_3COOH	1
	iii) Br_2 aq. / Bromine water	1

MARKING SCHEME

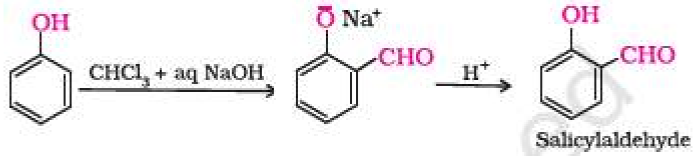
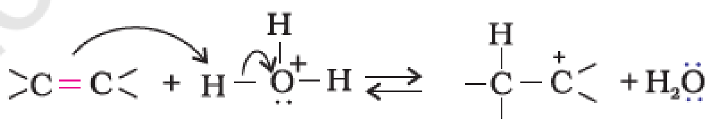
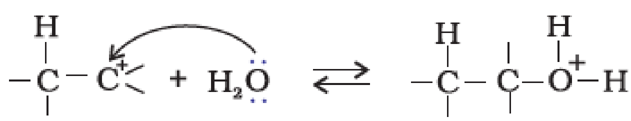
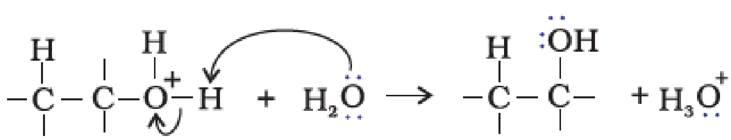
SR. SECONDARY SCHOOL EXAMINATION, 2020

Subject: CHEMISTRY

Q.No.	Expected Answer / Value Points	Distribution of Marks
	SECTION - A	
1.	Inversion	1
2.	$CH_3I + C_6H_5OH$	1
3.	But-2-ene / $CH_3CH{=}CHCH_3$	1
4.	Polarimeter	1
5.	Antiseptic	1
6.	Branched hydrocarbon part	1
7.	$CH_3CH{=}CH_2$	1
8.	A	1
9.	No	1
10.	Zn	1
11.	A	1
12.	C	1
13.	C	1
14.	B	1
15.	B	1
16.	i	1
17.	i	1
18.	iii	1
19.	ii	1
20.	ii	1
	SECTION – B	
21.	(a) 1^{st} order (b) No, due to exponential relation / the curve never touches the x-axis.	1 1
22.	a.  b. 	1 1
23.	(a) The drugs which are used to control stress / anxiety / tension / mild or severe mental diseases (b) The drugs which are used to kill or to prevent the growth of micro-organism, applied externally on living tissues.	1 1

	OR Soap molecules form micelle around the oil droplet or dirt in such a way that hydrophobic part interacts with the oil droplet and hydrophilic part projects out. Micelles can be washed away on rinsing with water. Thus soap helps in emulsification and washing away of oil and fats.	2
24.	(a) $K_3[Al(C_2O_4)_3]$ (b) $[Co(NH_3)_4(H_2O)Cl]Cl_2$	1 1
25.	$\pi = CRT$ (Volume of solution = 100 mL) $\pi = \frac{n}{V} RT$ $\pi = \frac{5}{60} \times \frac{0.0821 \times 300}{0.1}$ $\pi = 20.5$ atm. (½ mark may be deducted for no or incorrect unit) **OR** ΔT_f (urea) = ΔT_f (Z) $kf \times \frac{w\ urea}{Murea} \times \frac{1000}{w\ solvent} = kf \times \frac{wz}{Mz} \times \frac{1000}{Wsolvent}$ $\frac{7.5}{60} \times \frac{1000}{100} = \frac{42.75}{Mz} \times \frac{1000}{100}$ $Mz = \frac{42.75 \times 60}{7.50} = 342\ g/mol$ (or by any other correct method) (½ mark may be deducted for no or incorrect unit)	½ ½ 1 ½ ½ 1
26.	a. $NH_2(CH_2)_6NH_2$ – Hexamethylenediamine, $HOOC(CH_2)_4COOH$ – Adipic acid b. $CH_2{=}CH{-}CH{=}CH_2$ – Butadiene, $C_6H_5CH{=}CH_2$ – Styrene	½+½ ½+½
27.	a. 2-Methylbutan-2-ol / $(CH_3)_2C(OH)CH_2CH_3$ is formed / $CH_3COCH_2CH_3 \xrightarrow[\text{ii) } H_2O]{\text{i) } CH_3MgBr} (CH_3)_2C(OH)CH_2CH_3$ b. Benzene / C_6H_6 is formed $C_6H_5COONa \xrightarrow{NaOH + CaO,\ \Delta} C_6H_6$	1 1
SECTION - C		
28.	$\Delta T_f = K_f\ m$ $1.5 = \frac{3.9 \times w_B}{176} \times \frac{1000}{75}$ Mass of ascorbic acid = 5.08 g.	1 1 1
29.	(a) Because sulphur readily gets oxidized itself to more stable +6 state. (b) Because of absence of d-orbital in Fluorine. (c) Because size increases from Helium to Radon. / dispersion or van der Waal forces increase from Helium to Radon.	1 1 1

29	**OR** (a) $MnO_2 + 4HCl \rightarrow MnCl_2 + Cl_2 + 2H_2O$ (b) $XeF_6 + KF \rightarrow K^+[XeF_7]^-$ (c) $4I^-_{(aq.)} + 4H^+_{(aq.)} + O_{2(g)} \rightarrow 2I_{2(s)} + 2H_2O_{(l)}$	1 1 1
30.	(a) (A) $\rightarrow CH_3CONH_2$ (B) $\rightarrow CH_3NH_2$ (b) (A) $\rightarrow C_6H_5NH_2$ (B) $\rightarrow C_6H_5N_2Cl$ (c) (A) $\rightarrow C_6H_5CN$ (B) $\rightarrow C_6H_5COOH$	½ + ½ ½ + ½ ½ + ½
30	**OR** a) (i) Add Ice cold ($NaNO_2$ + HCl) followed by phenol or β-Naphthol to both the compounds. Aniline forms orange red dye while ethylamine doesn't. ii) Add $CHCl_3$ and KOH (alc.) to both the compounds. Aniline gives foul smelling isocyanides while N-Methylaniline doesn't. (or any other suitable chemical test) b) Butanol > Butanmine > Butane	1 1 1
31.	(a) Because the – CHO group in glucose is involved in hemiacetal formation and thus is not free / due to cyclic structure of glucose -CHO group is not free. (b) Because the hydrogen bonds are formed between specific pairs of bases. (c) Starch is a polymer of α - glucose while cellulose is a polymer of β - glucose.	1 1 1
32.	(a) Increases (b) Decreases (c) Increases	1 1 1
33. a.	**Physiorption** / **Chemisorption** (i) Not specific / Highly specific (ii) Low $\Delta H_{adsorption}$ / High $\Delta H_{adsorption}$	1 1
b.	In adsorption, the substance is concentrated only at the surface while in absorption, the substance is uniformly distributed throughout the bulk of the solid / adsorption is a surface phenomenon while absorption is a bulk phenomenon	1
34.	(a) It converts Ni into its volatile compound, $Ni(CO)_4$. (b) It provides flux to remove impurities. (c) It selectively prevents one of the sulphide ore from coming to the froth.	1 1 1
	SECTION – D	
35.	(a) Tert-butyl alcohol, because it forms more stable 3^o carbocation than 1^o carbocation. (b) i)	1 1

35. a)	 ii) $(CH_3)_3CCl + NaOH_{(aq.)} \longrightarrow (CH_3)_3COH \xrightarrow{Na} (CH_3)_3CONa \xrightarrow{C_2H_5Cl} (CH_3)_3COC_2H_5$ iii) $CH_3CH=CH_2 \xrightarrow[iv)\ H_2O_2/OH^-]{iii)\ B_2H_6} CH_3CH_2CH_2OH$ (or by any other suitable method) **OR** Step 1: Protonation of alkene to form carbocation by electrophilic attack of H_3O^+. $H_2O + H^+ \rightarrow H_3O^+$  Step 2: Nucleophilic attack of water on carbocation.  Step 3: Deprotonation to form an alcohol.  b) i) $K_2Cr_2O_7 + H_2SO_4$ / $Na_2Cr_2O_7 + H_2SO_4$ ii) Br_2 in CH_3COOH iii) Br_2 aq. / Bromine water	1 1 1 1 ½ ½ 1 1 1
36.	(a) $E^0cell = E^o_C - E^o_A$ $= 0.34 - (-0.76)$ $= 1.10V$ $\Delta G^o = -nFE^o$ $= -2 \times 1.10 \times 96500$ $= -212300$ J/mol Or -212.3 kJ/mol (b) (i) Pollution free (ii) High efficiency. **OR**	½ ½ ½ ½ 1 1 1

36. (a) (i) Silver wire at 30°C because as temperature decreases, resistance decreases so conduction increases. 1

(ii) 0.1 M CH_3COOH, because on dilution degree of ionization increases hence conduction increases. 1

(iii) KCl solution at 50°C, because at high temperature mobility of ions increases and hence conductance increases 1

(b)

Electrochemical	Electrolytic	
(1) Anode -ve Cathode +ve	Anode +ve Cathode -ve	1
(2) Convert chemical energy to electrical energy	Convert electrical energy to chemical energy	1

(or any other correct differences)

37. (a) (i) $Cu^{+1}(3d^{10})$ compounds are white because of absence of unpaired electrons while Cu^{+2} $(3d^9)$ compounds are coloured due to unpaired e^- / shows d-d transition. 1

(ii) Chromate (CrO_4^{2-})changes to dichromate $(Cr_2O_7^{2-})$ ion in acidic medium. 1

(iii) due to completely filled d-orbitals in their ground state or in oxidized state. 1

(b) Co = $[Ar]4s^2 3d^7$, Co^{+2} =$[Ar]\ 3d^7$ ½ + ½

$\mu = \sqrt{n(n+2)}$ ½

$= \sqrt{3(3+2)} = \sqrt{15} = 3.92\ B.M.$ ½

OR

37. (a)

Lanthanoids	Actinoids	
(1) most of them are not radioactive	All are radioactive	1x3
(2) don't show a wide range of oxidation state	Show a wide range of oxidation states	
(3) Most of their ions are colourless	Most of their ions are coloured	

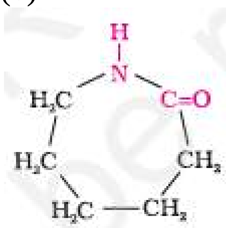
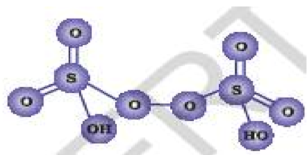
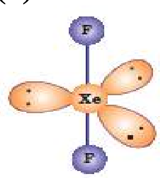
(or any other correct differences)

(b) (i) Sc^{+3} is diamagnetic because of absence of unpaired electron. 1

(ii) Cr has high M.P. & B.P. because of presence of strong intermetallic bonding than Cu. 1

56/1/3
MARKING SCHEME
SR. SECONDARY SCHOOL EXAMINATION, 2020
Subject: CHEMISTRY

Q.No.	Expected Answer / Value Points	Distribution of Marks
	SECTION - A	
1.	Racemic Mixture	1
2.	Monochromatic Light vibrating in one plane.	1
3.	$C_2H_5I + C_6H_5OH$	1
4.	Pent-2-ene / $CH_3CH{=}CHCH_2CH_3$	1
5.	Antiseptic	1
6.	B	1
7.	Branched hydrocarbon part	1
8.	$CF_2{=}CF_2$	1
9.	Zn	1
10.	No	1
11.	A	1
12.	C	1
13.	B	1
14.	A	1
15.	C	1
16.	i	1
17.	i	1
18.	iii	1
19.	ii	1
20.	i	1
	SECTION – B	
21.	$\pi = CRT$ (volume of Solution = 100 mL) $\pi = \frac{n}{V} RT$ $\pi = \frac{5}{60} \times \frac{0.0821 \times 300}{0.1}$ $\pi = 20.5$ atm. (½ mark may be deducted for no or incorrect unit)	½ ½ 1
	OR	
21.	ΔT_f (urea) = ΔT_f (Z) $kf \times \frac{w\ urea}{Murea} \times \frac{1000}{w\ solvent} = kf \times \frac{wz}{Mz} \times \frac{1000}{Wsolvent}$ $\frac{7.5}{60} \times \frac{1000}{100} = \frac{42.75}{Mz} \times \frac{1000}{100}$ $Mz = \frac{42.75 \times 60}{7.50} = 342\ g/mol$ (OR any other correct method) (½ mark may be deducted for no or incorrect unit)	½ ½ 1
22.	(a) 1st order (b) No, due to exponential relation / the curve never touches the x-axis.	1 ½ + ½

23.	(a) The drugs which are used to control stress / anxiety / tension / mild or severe mental diseases	1
	(b) The drugs which are used to kill or to prevent the growth of micro-organism, applied externally on living tissues.	1
	OR	
23	Soap molecules form micelle around the oil droplet or dirt in such a way that hydrophobic part interacts with the oil droplet and hydrophilic part projects out. Micelles can be washed away on rinsing with water. Thus soap helps in emulsification and washing away of oil and fats.	2
24.	(a) $CH_2{=}CH{-}CH{=}CH_2$, Butadiene; $CH_2{=}CH{-}CN$, Acrylonitrile	½+½
	(b)  Caprolactam / Aminocaproic acid, $NH_2(CH_2)_5COOH$	½+½
25.	(a) 	1
	(b) 	1
26.	a. $[Co(NH_3)_5(CO_3)]Cl$ b. $K_2[Ni(CN)_4]$	1 1
27.	a. Propane or $CH_3CH_2CH_3$ is formed / $CH_3COCH_3 \xrightarrow{\text{Zn–Hg, HCl(conc.)}} CH_3CH_2CH_3$	1
	b. Propan-2-ol or Isopropyl alcohol or $(CH_3)_2CHOH$ is formed / $CH_3CHO \xrightarrow[\text{ii) } H_2O]{\text{i) } CH_3MgBr} (CH_3)_2CHOH$	1

SECTION – C		
28.	(a) Because sulphur readily gets oxidized itself to more stable +6 state. (b) Because of absence of d-orbital in Fluorine. (c) Because size increases from Helium to Radon. / dispersion or van der Waal forces increase from Helium to Radon.	1 1 1
	OR	
28.	(a) $MnO_2 + 4HCl \rightarrow MnCl_2 + Cl_2 + 2H_2O$ (b) $XeF_6 + KF \rightarrow K^+[XeF_7]^-$ (c) $4I^-_{(aq.)} + 4H^+_{(aq.)} + O_{2(g)} \rightarrow 2I_{2(s)} + 2H_2O_{(l)}$	1 1 1
29.	$\Delta T_f = K_f\ m$ $1.5 = \frac{3.9 \times w_B}{176} \times \frac{1000}{75}$ Mass of ascorbic acid = 5.08 g.	1 1 1
30.	(a) Decreases. (b) Increases (c) Increases	1 1 1
31.	(a) (A) $\rightarrow CH_3CONH_2$ (B) $\rightarrow CH_3NH_2$ (b) (A) $\rightarrow C_6H_5NH_2$ (B) $\rightarrow C_6H_5N_2Cl$ (c) (A) $\rightarrow C_6H_5CN$ (B) $\rightarrow C_6H_5COOH$	½ + ½ ½ + ½ ½ + ½
	OR	
31	a) (i) Add Ice cold ($NaNO_2$ + HCl) followed by phenol or β-Naphthol to both the compounds. Aniline forms orange red dye while ethylamine doesn't. ii) Add $CHCl_3$ and KOH (alc.) to both the compounds. Aniline gives foul smelling isocyanides while N-Methylaniline doesn't. (Or any other suitable chemical test) b) Butanol > Butanmine > Butane	1 1 1
32.	(a) Because the – CHO group in glucose is involved in hemiacetal formation and thus is not free / due to cyclic structure of glucose -CHO group is not free. (b) Because the hydrogen bonds are formed between specific pairs of bases. (c) Starch is a polymer of α - glucose while cellulose is a polymer of β - glucose.	1 1 1
33.	(a) It selectively prevents one of the sulphide ore from coming to the froth. (b) Helps in converting Zr into its volatile compound ZrI_4. (c) Provides flux to remove impurities.	1 1 1

34.

Physiorption	Chemisorption	Marks
(i) Weak van der Waal forces	Strong chemical bonds	1
(ii) Favourable at low temperature	Increases till a certain temperature and then decreases afterwards.	1
(iii) low $\Delta H_{adsorption}$	High $\Delta H_{adsorption}$	1

SECTION – D

35. (a) (i) $Cu^{+1}(3d^{10})$ compounds are white because of absence of unpaired electrons while Cu^{+2} $(3d^9)$ compounds are coloured due to unpaired e^- / shows d-d transition. — 1

(ii) chromate (CrO_4^{2-})changes to dichromate $(Cr_2O_7^{2-})$ ion in acidic medium. — 1

(iii)due to completely filled d-orbitals in their ground state or in oxidized state. — 1

(b) Co = $[Ar]4s^2 3d^7$, Co^{+2} =$[Ar]\ 3d^7$ — ½ + ½

$\mu = \sqrt{n(n+2)}$ — ½

$= \sqrt{3(3+2)} = \sqrt{15} = 3.92\ B.M.$ — ½

OR

35. (a)

Lanthanoids	Actinoids
(1) most of them are not radioactive	All are radioactive
(2) don't show a wide range of oxidation state	Show a wide range of oxidation states
(3) Most of their ions are colourless	Most of their ions are coloured

1x3

(or any other correct differences)

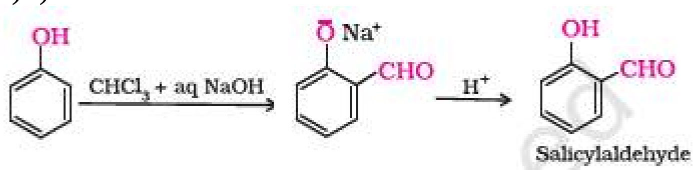
(b) (i) Sc^{+3}, because of absence of unpaired electron. — ½ +½

(ii) Cr, because of presence of stronger intermetallic bonding than Cu. — ½ +½

36. (a) Tert-butyl alcohol, — 1

because it forms more stable 3° carbocation than 1° carbocation. — 1

b) i)



1

ii) $(CH_3)_3CCl + NaOH_{(aq.)} \longrightarrow (CH_3)_3COH \xrightarrow{Na} (CH_3)_3CONa \xrightarrow{C_2H_5Cl} (CH_3)_3COC_2H_5$

1

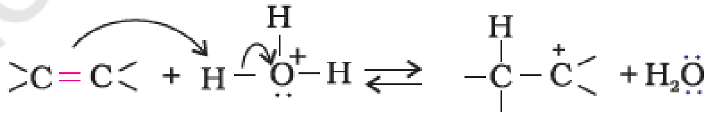
iii) $CH_3CH{=}CH_2 \xrightarrow[\text{vi) } H_2O_2/OH^-]{\text{v) } B_2H_6} CH_3CH_2CH_2OH$ — 1

(or by any other suitable method)

OR

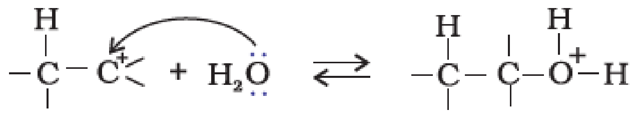
36. a) Step 1: Protonation of alkene to form carbocation by electrophilic attack of H_3O^+.

$H_2O + H^+ \rightarrow H_3O^+$



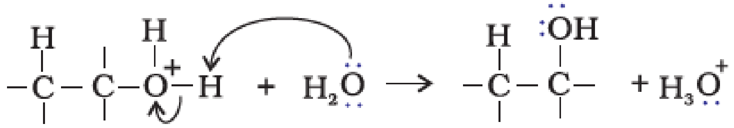
— 1

Step 2: Nucleophilic attack of water on carbocation.



— ½

Step 3: Deprotonation to form an alcohol.



— ½

b) i) $K_2Cr_2O_7 + H_2SO_4$ / $Na_2Cr_2O_7 + H_2SO_4$ — 1

ii) Br_2 in CH_3COOH — 1

iii) Br_2 aq. / Bromine water — 1

37. (a) $E^0cell = E^o_C - E^o_A$ — ½

$= 0.34 - (-0.76)$

$= 1.10V$ — ½

$\Delta G^o = -nFE^o$ — ½

$= -2 \times 1.10 \times 96500$ — ½

$= -212300$ J/mol Or -212.3 kJ/mol — 1

(b) (i) Pollution free — 1

(ii) High efficiency. — 1

OR

37. (a) (i) Silver wire at 30°C because as temperature increases, resistance increases so conduction decreases. — 1

(ii) 0.1 M CH_3COOH, because on dilution degree of ionization increases hence conduction increases. — 1

(iii) KCl solution at 50°C, because at high temperature mobility of ions increases and hence conductance increases — 1

(b)

Electrochemical	Electrolytic	Marks
(1) Anode -ve Cathode +ve	Anode +ve Cathode -ve	1
(2) Convert chemical Energy to electrical energy	Convert electrical Energy to chemical energy	1

(or any other correct differences)