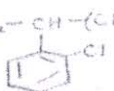
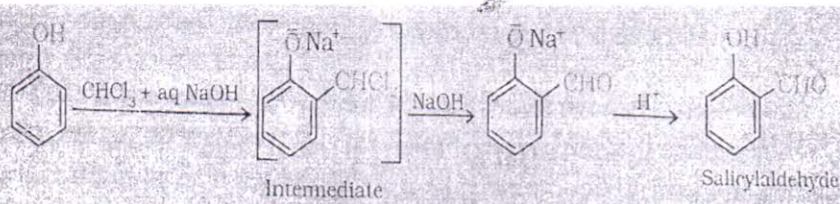
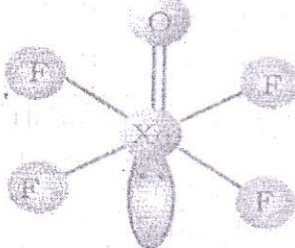
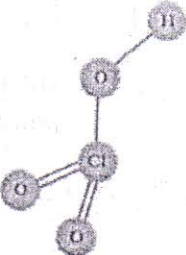


Marking Scheme
Chemistry(Compartment)
Outside 56/1

1	Second order reaction.	1
2	Because it has large surface area per unit mass.	1
3	HF < HCl < HBr < HI	1
4	Tetraamminedichloridoplatinum(IV) Chloride.	1
5	$I - CH_2 - \underset{\text{Cl}}{\text{CH}} - (CH_2)_5 - CH_3$ 	1
6	 <p style="text-align: center;">Reimer- Tieman reaction</p>	1
7	3-bromo-5-chloro benzoic acid	1
8	Vitamin B ₁₂	1
9	In a conductor there is no energy gap between the valence band and conduction band. e.g. Cu, Al etc.(any one)	½ + ½
	In a semiconductor, the impurity band lies between valence band and empty band of the insulator. e.g Si, Ge (any one)	½ + ½
10	Number of atoms contributed by 8 gold atoms present at the corners per unit cell = 8 x 1/8 = 1 atom	½
	Number of atoms contributed by 6 Cd atoms present at the faces per unit cell = ½ x 6 = 3 atoms	½
	Therefore, the formula of alloy is AuCd ₃ .	1
11	H ₂ -O ₂ fuel cell The cell reaction are :	1
	<i>At anode—oxidation occurs</i>	
	$2H_2(g) + 4OH^-(aq) \longrightarrow 4H_2O(l) + 4e^-$	½
	<i>At cathode—reduction occurs</i>	
	$O_2(g) + 2H_2O(l) + 4e^- \longrightarrow 4OH^-(aq)$	½

12	<p>i) Rate determining step of a reaction is the slowest step in a series of steps.</p> <p>ii) The number of atoms or molecules taking part in a rate determining step is called molecularity of a reaction.</p> <p style="text-align: center;">OR</p> <p>A reaction which is not truly first order but which shows first order kinetics under special conditions is called a pseudo first order reaction. e.g. Hydrolysis of an ester, inversion of cane sugar. (any one)</p>	1 1 1 1
13	$k = \frac{2.303}{t} \log \frac{[A_0]}{[A]}$ $k = \frac{2.303}{5 \text{ min}} \log \frac{0.6 \text{ M}}{0.3 \text{ M}}$ $k = 0.219 \text{ min}^{-1}$	$\frac{1}{2}$ $\frac{1}{2}$ 1
14	<p>i)</p>  <p>ii)</p> 	1 1
15	<p>i) $\text{XeF}_2 + \text{PF}_5 \rightarrow [\text{XeF}]^+ [\text{PF}_6]^-$</p> <p>ii) $6\text{NaOH} + 3\text{Cl}_2 \rightarrow 5\text{NaCl} + \text{NaClO}_3 + 3\text{H}_2$</p>	1 1
16	<p>When a complex is formed in a number of steps then equilibrium constant of each step is known as stepwise stability constant and the equilibrium constant of complex is known as overall stability constant.</p> <p>For a complex formation $\text{M} + 4\text{L} = \text{ML}_4$</p> $\beta_4 = K_1 \times K_2 \times K_3 \times K_4$ <p>where β_4 is overall stability constant and K_1, K_2, K_3 and K_4 are stepwise stability constants.</p>	$\frac{1}{2}, \frac{1}{2}$ $\frac{1}{2}, \frac{1}{2}$

17	<p>(i) Because aniline forms salt with the lewis acid (AlCl_3)</p> <p>(ii) Because alkyl groups are electron donating (+I effect) and so increase electron density on the nitrogen atom whereas aryl groups are electron withdrawing (-I effect) and so decrease electron density on the nitrogen atom.</p>	1 1
18	<p>i) Because aryl halides do not undergo nucleophilic substitution reaction under ordinary conditions.</p> <p>ii) $\text{C}_6\text{H}_5\text{NH}_2 < (\text{C}_2\text{H}_5)_2\text{NH} < \text{C}_2\text{H}_5\text{NH}_2$</p>	1 1
19	<p>$E^\circ_{\text{cell}} = E^\circ_{\text{c}} - E^\circ_{\text{a}} = [0.34 - (-0.76)]\text{V} = 1.10\text{ V}$</p> <p>$\log K_c = \frac{nE^\circ_{\text{cell}}}{0.059}$</p> <p>$= \frac{2 \times 1.10\text{V}}{0.059}$</p> <p>$\log K_c = 37.29$</p> <p>$K_c = \text{antilog} (37.29)$</p> <p>$K_c = 1.95 \times 10^{37}$</p>	1 $\frac{1}{2}$ 1 $\frac{1}{2}$
20	<p>i) Electrophoresis is the movement of colloidal particles towards positive or negative electrodes in electric field.</p> <p>ii) Dialysis is the removal of soluble impurities from sols by a semipermeable membrane.</p> <p>iii) Tyndall effect – The scattering of light by the colloidal particles is known as tyndall effect.</p>	1 1 1

21	<p>(i) Zone refining: This method is based on the principle that the impurities are more soluble in the melt than in the solid state of metal.</p> <p>(ii) Liquation method :The method is based on the lower melting point of the metal than the impurities and tendency of the molten metal to flow on the sloping surface.</p> <p>(iii) Chromatographic method: Different components of a mixture are differently adsorbed on an adsorbent. The adsorbed components are removed by using suitable solvents.</p> <p style="text-align: center;">OR</p> <p>Alumina is treated with NaOH to form aluminate which can be precipitated as hydrated aluminium oxide by passing CO₂. Since silica reacts with NaOH to form sodium silicate, it does not precipitate out and can be filtered off.</p> <p>$Al_2O_3 + 2 NaOH + 3H_2O \rightarrow 2Na [Al (OH)_4]$ $2Na [Al (OH)_4] + CO_2 \rightarrow 2NaHCO_3 + Al_2O_3 \cdot xH_2O$</p> <p style="text-align: center;">heat</p> <p>$Al_2O_3 \cdot xH_2O \longrightarrow Al_2O_3 + xH_2O$</p>	<p>1 x 3=3</p> <p>1 ½</p> <p>1 ½</p>
22	<p>i) Because N does not have vacant d- orbitals.</p> <p>ii) It is due to resonance.</p> <p>iii) It is due to less bond dissociation energy of ICl which is due to less effective overlapping.</p>	<p>1</p> <p>1</p> <p>1</p>
23	<p>a)</p> <p>i) Chlorobenzene and Benzyl Chloride : Benzyl Chloride on reacting with aq. NaOH and AgNO₃ gives white ppt of AgCl whereas Chlorobenzene does not.</p> <p>ii) Chloroform and Carbon tetrachloride : Chloroform on heating with primary amine and alkali gives foul smell of isocyanide whereas CCl₄ does not.</p> <p>b) Because C-Cl bond in methyl chloride is weaker than C-Cl partial double bond of chlorobenzene.</p>	<p>1</p> <p>1</p> <p>1</p>

