

$\underline{P}lace\ for\ \underline{R}ational\ \&\ \underline{\underline{E}}ducational\ \underline{\underline{M}}otivations!!$

Chemistry Marking scheme Delhi - 2016 Set - 56/1/1/D

O.No VALUE POINTS CH ₃ CH ₂ CH(Cl)CH ₃ ; secondary halide/ 2° carbocation is more stable NH ₃ Ferromagnetism 1, 2,4,6-Tribromoaniline / 2,4,6-Tribromobenzenamine Like Charged particles cause repulsion/ Brownian motion/ solvation (i) Mercury cell (ii) Fuel cell (iii) Lead storage battery (iv) Dry cell 7 A-Na ₂ Cr ₂ O ₇ C-K ₂ Cr ₂ O ₇ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO ₄ ⁻ + 3S ₂ O ₃ ⁻² + H ₂ O → 8MnO ₂ + 6SO ₄ ⁻² + 2OH ⁻ Cr ₂ O ₇ ⁻² + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 1 (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) 9. (i) zero order, bimolecular/ unimolecular (ii) mol L ¹ s' 10. (iii) CH ₃ -CH ₃ -OH + H ⁻ → CH ₃ -CH ₃ -OH (iii) CH ₃ -CH ₃ -OH + H ⁻ → CH ₃ -CH ₃ -OH (iii) CH ₃ -CH ₃ -OH + H ⁻ → CH ₃ -OH (iii) CH ₃ -CH ₃ -OH + H ⁻ → CH ₃ -OH (iii) CH ₃ -CH ₃ -OH + H ⁻ → CH ₃ -OH (iii) CH ₃ -CH ₃ -OH + H ⁻ → CH ₃ -OH (iiii) CH ₃ -CH ₃ -OH + H ⁻ → CH ₃ -OH (iiiii) CH ₃ -CH ₃ -OH (iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii		<u>Set – 56/1/1/D</u>		
stable NH ₃ Ferromagnetism 1 2,4,6-Tribromoaniline / 2,4,6-Tribromobenzenamine Like Charged particles cause repulsion/ Brownian motion/ solvation (i) Mercury cell (ii) Fuel cell (iii) Lead storage battery (iv) Dry cell 7 A-Na ₂ Cr ₂ O ₇ B-Na ₂ Cr ₂ O ₇ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO ₄ - + 3S ₂ O ₃ ² + H ₂ O → 8MnO ₂ + 6SO ₄ ² + 2OH Cr ₂ O ₇ ² + 14 H ⁺ + 3 Sn ² + 2 Cr ³ + 3 Sn ⁴ + 7 H ₂ O 1 8 (i) [Cr(H ₂ O) ₃ Cr] Cl ₂ ·H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ¹ s ⁻¹ (ii) CH ₃ -CH ₃ -O·H + H → CH ₃ -CH ₃ -O·H (iii) CH ₄ -CH ₃ -O·H + H → CH ₃ -CH ₃ -O·H (iii) CH ₄ -CH ₃ -O·H + H → CH ₃ -CH ₃ -O·H (iii) CH ₄ -CH ₃ -O·H + H → CH ₃ -CH ₄ -O·CH ₄ -O·CH ₄ -O·H (iii) CH ₃ -O·H + CH ₃ -O·H + H → CH ₄ -O·H ₄ -O·H ₄ + H (iii) CH ₃ -O·H + CH ₃ -O·H + H → CH ₄ -O·H ₄ -O·H ₄ + H (iii) CH ₃ -O·H + CH ₃ -O·H + H → CH ₄ -O·H ₄ -O·H ₄ -O·H ₄ + H (iii) CH ₃ -O·H + CH ₄ -O·H ₄ -	Q.No	VALUE POINTS	MARKS	
2 NH ₃ 3 Ferromagnetism 4 2,4,6-Tribromoaniline / 2,4,6-Tribromobenzenamine 5 Like Charged particles cause repulsion/ Brownian motion/ solvation 6 (i) Mercury cell (ii) Fuel cell (iii) Lead storage battery (iv) Dry cell 7 A-Na ₂ CrO ₄ B-Na ₂ Cr ₂ O ₇ C-K ₂ Cr ₂ O ₇ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO ₄ ⁻ + 3S ₂ O ₃ ²⁻ + H ₂ O —> 8MnO ₂ + 6SO ₄ ²⁻ + 2OH ⁻ Cr ₂ O ₇ ²⁻ + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 1 (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (ii) crowder, bimolecular/ unimolecular (iii) mol L ⁺ s ⁻¹ 10. (i) CH ₂ CH ₂ O ₇ + CH ₂ CH ₃ O ₇ + CH ₃ CH ₃ O ₇ + CH ₄ CH ₃ O ₇ +	1		1/2, 1/2	
3 Ferromagnetism 4 2,4,6-Tribromoaniline / 2,4,6-Tribromobenzenamine 5 Like Charged particles cause repulsion/ Brownian motion/ solvation 6 (i) Mercury cell (ii) Fuel cell (iii) Lead storage battery (iv) Dry cell 7 A-Na ₂ CrO ₄ B-Na ₂ CrO ₂ O ₇ C-K ₂ Cr ₂ O ₇ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO ₄ ⁻ + 3S ₂ O ₃ ²⁻ + H ₂ O → 8MnO ₂ + 6SO ₄ ²⁻ + 2OH ⁻ Cr ₂ O ₇ ²⁻ + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 1 1 8 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ ·H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) ml L ⁻¹ s ⁻¹ 10. (i) CH ₃ -CH ₃ -O-H + H ⁻ → CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -H + H ₂ O (ii) CH ₃ -CH ₃ -O-H + H ⁻ → CH ₃ -CH ₃ -O-CH ₃ -CH ₃ + H ₂ O (iii) CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -H + H ₂ O (ii) CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -CH ₃ -O-CH ₃ -O-CH ₃ -CH ₃ -O-CH ₃ -O-CH ₃ -CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -	2	SERVICE SERVICE SERVICES		
4 2,4,6-Tribromoaniline / 2,4,6-Tribromobenzenamine 1 5 Like Charged particles cause repulsion/ Brownian motion/ solvation 1 6 (i) Mercury cell ½2 (ii) Fuel cell ½2 (iii) Lead storage battery ½2 (iv) Dry cell ½2 7 A-Na ₂ Cr ₂ O ₇ ½2 B-Na ₂ Cr ₂ O ₇ ½2 C-K ₂ Cr ₂ O ₇ ½2 Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO ₄ − + 3S ₂ O ₃ ² + H ₂ O → 8MnO ₂ + 6SO ₄ ² + 2OH 1 Cr ₂ O ₇ ² + 14 H* + 3 Sn ² + → 2 Cr ³ + 3 Sn ⁴ + 7 H ₂ O 1 8 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ ·H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (no deduction for not writing hydrate) 9. (i) zero order , bimolecular/ unimolecular ½2, ½2 10. (ii) mol L ⁻¹ s · 1 (ii) CH ₃ -CH ₃ -O · H · H · → CH ₃ -CH ₃ -O · H · H ₂ O · H · H ₂ O · H · H · → CH ₃ -CH ₃ -O · H · H ₂ O · H · H ₂ O · H · H · → CH ₃ -CH ₃ -O · CH ₃ CH ₃ · H ₂ O · H · H ₂ O · H · H · → CH ₃ -CH ₃ -O · CH ₃ CH ₃ · H ₄ O · H · H ₂ O · H · H ₂ O · H · H · O · H · H ₂ O · H · H · O · H · H ₂ O · H · H · O · H · H · O · H · H · O · H · H				
Like Charged particles cause repulsion/ Brownian motion/ solvation (i) Mercury cell (ii) Fuel cell (iii) Lead storage battery (iv) Dry cell 7 A-Na₂CrO₄ B-Na₂Cr₂O¬ C-K₂Cr₂O¬ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO₄⁻ + 3S₂O₃²⁻ + H₂O → 8MnO₂ + 6SO₄²⁻ + 2OH⁻ Cr₂O¬²⁻ + 14 H⁺ + 3 Sn²⁺ → 2 Cr³⁺ + 3 Sn⁴⁺ + 7 H₂O 8 (i) [Cr(H₂O⟩₅Cl]Cl₂⋅H₂O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L¹ s¹ 10. (i) CH₃-CH₃-Ö+ + CH₃-CH₃-Ö+ H (iii) CH₃-CH₃-Ö-CH₃-CH₃-Ö+ H (iii) CH₃-CH₃-Ö-CH₃-CH₃-Ö+ H (iii) CH₃-CH₃-Ö-CH₃-CH₃-Ö+ H (iii) CH₃-CH₃-Ö-CH₃-CH₃-CH₃-Ö+ CH₃-CH₃-Ö+ CH₃-CH₃-Ö-CH₃-CH₃-CH₃-CH₃-CH₃-CH₃-CH₃-CH₃-CH₃-CH₃	100000	BT Service studies county (s. c. and c.		
(ii) Mercury cell (ii) Fuel cell (iii) Lead storage battery (iv) Dry cell 7 A-Na ₂ Cr ₂ O ₇ B-Na ₂ Cr ₂ O ₇ C-K ₂ Cr ₂ O ₇ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO ₄ ⁻ + 3S ₂ O ₃ ²⁻ + H ₂ O → 8MnO ₂ + 6SO ₄ ²⁻ + 2OH ⁻ Cr ₂ O ₇ ²⁻ + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 8 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ ·H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ⁻¹ s ⁻¹ 10. (i) CH ₃ -CH ₃ -OH + H → CH ₃ -CH ₃ -OH (iii) CH ₃ -CH ₃ -OH + H → CH ₃ -CH ₃ -OH (iii) CH ₃ -CH ₃ -OH + H → CH ₃ -CH ₃ -OH (iii) CH ₃ -CH ₃ -OH + H → CH ₃ -CH ₃ -OH (iii) CH ₃ -CH ₃ -OH + H → CH ₃ -CH ₃ -OH (iiii) CH ₃ -CH ₃ -OH + H → CH ₃ -CH ₃ -OH (iiiii) CH ₃ -CH ₃ -OH + H → CH ₃ -CH ₃ -OH (iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii				
(ii) Fuel cell (iii) Lead storage battery (iv)Dry cell 7 A-Na ₂ Cr ₂ O ₇ B-Na ₂ Cr ₂ O ₇ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO ₄ + 3S ₂ O ₃ ²⁻ + H ₂ O → 8MnO ₂ + 6SO ₄ ²⁻ + 2OH ⁻ Cr ₂ O ₇ ²⁻ + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 8 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ ·H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (no deduction for not writing hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ⁻¹ s ⁻¹ 10. (i) CH ₃ -CH ₂ -O ₁ -H + H ⁻ → CH ₃ -CH ₃ -O ₁ -H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H ₂ O (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ₁ -CH ₃ CH ₃ + H (iii) CH ₃ CH ₃ -O ⁻ + CH ₃ -CH ₃ -O ⁻ +	100000	W. Marrier Compression Com		
(iii) Lead storage battery (iv)Dry cell 7 A-Na ₂ CrO ₄ B-Na ₂ Cr ₂ O ₇ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO ₄ + 3S ₂ O ₃ ²⁻ + H ₂ O → 8MnO ₂ + 6SO ₄ ²⁻ + 2OH ⁻ Cr ₂ O ₇ ²⁻ + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 1 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ .H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ⁻¹ s ⁻¹ 10. (ii) CH ₃ -CH ₃ -O-H + H ⁻ → CH ₃ -CH ₃ -O-H (iii) CH ₃ -CH ₃ -O-H + H ⁻ → CH ₃ -CH ₃ -O-H (iii) CH ₃ -CH ₃ -O-H + H ⁻ → CH ₃ -CH ₃ -O-CH ₃ -CH ₃ + H ₂ O 1 (ii) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while -I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.	6			
(iv)Dry cell 7 A-Na ₂ CrO ₄ B-Na ₂ Cr ₂ O ₇ C-K ₂ Cr ₂ O ₇ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO ₄ ⁻ + 3S ₂ O ₃ ²⁻ + H ₂ O → 8MnO ₂ + 6SO ₄ ²⁻ + 2OH ⁻ Cr ₂ O ₇ ²⁻ + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 1 (i) [Cr(H ₂ O) ₃ Cl]Cl ₂ ·H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ¹ s ⁻¹ 10. 11 (ii) CH ₃ -CH ₂ -Ö-H + H ⁻ → CH ₃ -CH ₂ -Ö-H (iii) CH ₃ -CH ₂ -Ö ⁻ + CH ₃ -CH ₃ -Ö-H (iii) CH ₃ -CH ₂ -Ö ⁻ - CH ₃ -CH ₃ -O-CH ₃ -CH ₃ + H ₃ O H (iii) CH ₃ -CH ₂ -Ö ⁻ - CH ₃ -CH ₃ -O-CH ₃ -CH ₃ + H (iii) CH ₃ -CH ₂ -Ö ⁻ - CH ₃ -CH ₃ -O-CH ₃ -CH ₃ + H (iii) CH ₃ -CH ₂ -Ö ⁻ - CH ₃ -CH ₃ -O-CH ₃ -CH ₃ + H (iii) CH ₃ -CH ₃ -Ö-CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -O-CH ₃ -CH ₃ + H (iii) CH ₃ -CH ₃ -Ö-CH ₃ -CH ₃ -O-CH ₃ -CH ₃ -O-CH ₃ -CH ₃ + H (iii) CH ₃ -CH ₃ -Ö-CH ₃ -CH ₃ -O-CH ₃ -CH ₃			14775031	
7 A-Na ₂ CrO ₄ B-Na ₂ Cr ₂ O ₇				
B-Na ₂ Cr ₂ O ₇ C-K ₂ Cr ₂ O ₇ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 7 8MnO ₄ ⁻ + 3S ₂ O ₃ ²⁻ + H ₂ O → 8MnO ₂ + 6SO ₄ ²⁻ + 2OH ⁻ Cr ₂ O ₇ ²⁻ + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 8 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ ·H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ⁻¹ s ⁻¹ 10. 10. 11. (ii) CH ₃ -CH ₃ -OH + H ⁻ → CH ₃ -CH ₃ -OH → CH ₃ -CH ₃ -CH ₃ -CH ₃ -OH → CH ₃ -CH ₃ -OH → CH ₃ -CH ₃ -OH → CH ₃ -CH			1/2	
C-K ₂ Cr ₂ O ₇ Use- strong oxidising agent / as a primary standard in volumetric analysis OR 8MnO ₄ − + 3S ₂ O ₃ ^{2−} + H ₂ O → 8MnO ₂ + 6SO ₄ ^{2−} + 2OH [−] Cr ₂ O ₇ ^{2−} + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 1 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ .H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (no deduction for not writing hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ¹ s ⁻¹ 10. (i) CH ₃ -CH ₂ -O-H + H → CH ₃ -CH ₂ -O-H (ii) CH ₃ -CH ₂ -O-H + H → CH ₃ -CH ₂ -O-H (iii) CH ₃ -CH ₂ -O-CH ₂ CH ₃ → CH ₃ -CH ₂ -O-CH ₂ CH ₃ + H (iii) CH ₃ -CH ₂ -O-CH ₂ CH ₃ → CH ₃ -CH ₂ -O-CH ₂ CH ₃ + H (iii) CH ₃ -CH ₂ -O-CH ₂ CH ₃ → CH ₃ -CH ₂ -O-CH ₂ CH ₃ + H (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -1 and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.	7		1/2	
Use- strong oxidising agent / as a primary standard in volumetric analysis OR 8MnO₄⁻ + 3S₂O₃²⁻ + H₂O → 8MnO₂ + 6SO₄²⁻ + 2OH⁻ Cr₂Oγ²⁻ + 14 H⁺ + 3 Sn²⁺ → 2 Cr³⁺ + 3 Sn⁴⁺ + 7 H₂O 1 8 (i) [Cr(H₂O)₅Cl]Cl₂⋅H₂O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (no deduction for not writing hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L¹ s¹ 1 10. (i) CH₃-CH₃-O-H + H' → CH₃-CH₃-O-H (ii) CH₃-CH₃-O-H + H' → CH₃-CH₃-O-H (iii) CH₃-CH₃-O-CH₃-CH₃-O-CH₃-CH₃ + H¹ (iii) CH₃-CH₃-O-CH₃-CH₃-O-CH₃-CH₃-CH₃-CH₃-CH₃-CH₃-CH₃-CH₃-CH₃-CH₃		B-Na ₂ Cr ₂ O ₇	1/2	
volumetric analysis OR OR $SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ Cr_2O_7^{2^-} + 14 H^+ + 3 Sn^{2^+} \rightarrow 2 Cr^{3^+} + 3 Sn^{4^+} + 7 H_2O$ 1 $SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ Cr_2O_7^{2^-} + 14 H^+ + 3 Sn^{2^+} \rightarrow 2 Cr^{3^+} + 3 Sn^{4^+} + 7 H_2O$ 1 $SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3S_2O_3^{2^-} + H_2O \longrightarrow SMnO_2 + 6SO_4^{2^-} + 2OH^ SMnO_4^- + 3SO_4^- + 10$ $SMnO_4^- +$		$C-K_2Cr_2O_7$	1/2	
OR 8MnO ₄ ⁻ + 3S ₂ O ₃ ²⁻ + H ₂ O → 8MnO ₂ + 6SO ₄ ²⁻ + 2OH ⁻ 1 Cr ₂ O ₇ ²⁻ + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 1 8 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ ·H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (no deduction for not writing hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ⁻¹ s ⁻¹ 10. (i) CH ₃ -CH ₃ -Ö-H + H ⁻ → CH ₃ -CH ₂ -Ö-H (ii) CH ₃ CH ₃ -Ö-CH ₂ -CH ₃ → CH ₃ -CH ₃ -Ö-CH ₂ CH ₃ + H ₂ O (iii) CH ₃ CH ₃ -Ö-CH ₂ CH ₃ → CH ₃ CH ₃ -O-CH ₂ CH ₃ + H (iv) CH ₃ CH ₃ -Ö-CH ₂ CH ₃ → CH ₃ CH ₃ -O-CH ₂ CH ₃ + H 11. (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.		Use- strong oxidising agent / as a primary standard in	1/2	
8MnO ₄ + 3S ₂ O ₃ ² + H ₂ O → 8MnO ₂ + 6SO ₄ ² + 2OH 1 Cr ₂ O ₇ ² + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 1 8 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ ·H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (no deduction for not writing hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ⁻¹ s ⁻¹ 1 10. (i) CH ₃ -CH ₂ ·Ō-H + H' → CH ₃ -CH ₂ ·Ō-H (ii) CH ₃ CH ₂ ·Ō-CH ₂ CH ₃ → CH ₃ CH ₂ ·Ō-CH ₂ CH ₃ + H ₂ O (iii) CH ₃ CH ₂ ·Ō-CH ₃ CH ₃ → CH ₃ CH ₂ ·Ō-CH ₃ CH ₃ + H (iii) CH ₃ CH ₂ ·Ō-CH ₃ CH ₃ → CH ₃ CH ₂ ·Ō-CH ₃ CH ₃ + H (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.		volumetric analysis		
Cr ₂ O ₇ ²⁻ + 14 H ⁺ + 3 Sn ²⁺ → 2 Cr ³⁺ + 3 Sn ⁴⁺ + 7 H ₂ O 8 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ .H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (no deduction for not writing hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ¹ s ⁻¹ 10. (i) CH ₃ -CH ₂ -O-H + H ⁻ → CH ₃ -CH ₂ -O-H (ii) CH ₃ -CH ₂ -O-H + H ⁻ → CH ₃ -CH ₂ -O-CH ₂ CH ₃ + H ₂ O (iii) CH ₃ CH ₂ -O-CH ₃ CH ₃ → CH ₃ -CH ₂ -O-CH ₃ CH ₃ + H (iii) CH ₃ CH ₂ -O-CH ₃ CH ₃ → CH ₃ CH ₂ -O-CH ₃ CH ₃ + H (ii) CH ₃ CH ₂ -O-CH ₃ CH ₃ → CH ₃ CH ₃ -O-CH ₃ CH ₃ + H (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.		OR		
8 (i) [Cr(H ₂ O) ₅ Cl]Cl ₂ .H ₂ O (ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (no deduction for not writing hydrate) 9. (i) zero order , bimolecular/ unimolecular (ii) mol L ⁻¹ s ⁻¹ 10. (i) CH ₃ -CH ₂ -Ö-H + H' → CH ₃ -CH ₂ -Ö-H (ii) CH ₃ -CH ₂ -Ö-H + H' → CH ₃ -CH ₂ -Ö-H (iii) CH ₃ -CH ₂ -Ö-CH ₃ -CH ₃ -	7	$8MnO_4^- + 3S_2O_3^{2-} + H_2O \longrightarrow 8MnO_2 + 6SO_4^{2-} + 2OH^-$	1	
(ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (no deduction for not writing hydrate) 9. (i) zero order, bimolecular/ unimolecular (ii) mol L ⁻¹ s ⁻¹ 10. (i) CH ₃ -CH ₂ -O-H + H' -> CH ₃ -CH ₂ -O-H (ii) CH ₃ -CH ₂ -O-H + CH ₃ -CH ₂ -O-H - CH ₂ CH ₃ + H ₂ O (iii) CH ₃ -CH ₂ -O-CH ₃ -CH ₃ -CH ₃ -O-CH		$\text{Cr}_2\text{O}_7^{2-} + 14 \text{ H}^+ + 3 \text{ Sn}^{2+} \rightarrow 2 \text{ Cr}^{3+} + 3 \text{ Sn}^{4+} + 7 \text{ H}_2\text{O}$	1	
(ii) pentaaquachloridoChromium(III) chloride monohydrate (or chloride hydrate) (no deduction for not writing hydrate) 9. (i) zero order, bimolecular/ unimolecular (ii) mol L ⁻¹ s ⁻¹ 10. (i) CH ₃ -CH ₂ -O-H + H' -> CH ₃ -CH ₂ -O-H (ii) CH ₃ -CH ₂ -O-H + CH ₃ -CH ₂ -O-H - CH ₂ CH ₃ + H ₂ O (iii) CH ₃ -CH ₂ -O-CH ₃ -CH ₃ -CH ₃ -O-CH	8	(i) [Cr(H ₂ O) ₅ Cl]Cl ₂ .H ₂ O	1	
(no deduction for not writing hydrate) 9. (i) zero order, bimolecular/unimolecular (ii) mol L⁻¹ s⁻¹ 10. (i) CH₃-CH₃-Ö-H + H' → CH₃-CH₂-Ö-H (ii) CH₃-CH₂-Ö-H + H' → CH₃-CH₂-Ö-H (iii) CH₃-CH₂-Ö-CH₂-CH₃-→ CH₃-CH₃-O-CH₃-CH₃ + H¹ (iii) CH₃-CH₂-Ö-CH₃-CH₃-→ CH₃-CH₃-O-CH₃-CH₃ + H¹ 11. (i) In chlorobenzene, each carbon atom is sp² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp² and sp³ respectively/ -I and +R effect oppose each other while -I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp² hybridised.	0.000	(ii) pentaaquachloridoChromium(III) chloride monohydrate (or	1	
9. (i) zero order , bimolecular/ unimolecular (ii) mol L ⁻¹ s ⁻¹ 10. (i) CH ₃ -CH ₂ -O-H + H' → CH ₃ -CH ₂ -O-H (ii) CH ₃ CH ₂ -O-H + CH ₃ -CH ₂ -O-CH ₂ CH ₃ + H ₂ O (iii) CH ₃ CH ₂ -O-CH ₂ CH ₃ → CH ₃ CH ₂ -O-CH ₂ CH ₃ + H (ii) CH ₃ CH ₂ -O-CH ₂ CH ₃ → CH ₃ CH ₂ -O-CH ₂ CH ₃ + H (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.				
(ii) mol L ⁻¹ s ⁻¹ 10. (i) CH ₃ -CH ₂ -O-H + H' \rightarrow CH ₃ -CH ₂ -O-H (ii) CH ₃ CH ₂ -O-H + H' \rightarrow CH ₃ -CH ₂ -O-CH ₂ CH ₃ + H ₂ O (iii) CH ₃ CH ₂ -O-CH ₃ CH ₃ \rightarrow CH ₃ CH ₂ -O-CH ₂ CH ₃ + H (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while -I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.	9.		1/2, 1/2	
(i) CH ₃ -CH ₂ -O-H + H' → CH ₃ -CH ₂ -O-H (ii) CH ₃ -CH ₂ -O-H + H' → CH ₃ -CH ₂ -O-CH ₂ CH ₃ + H ₂ O (iii) CH ₃ CH ₂ -O-CH ₃ CH ₃ → CH ₃ CH ₂ -O-CH ₂ CH ₃ + H (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.				
(i) CH ₃ -CH ₂ -O-H + H' \rightarrow CH ₃ -CH ₂ -O-H (ii) CH ₃ -CH ₂ -O-H + H' \rightarrow CH ₃ -CH ₂ -O-CH ₂ CH ₃ + H ₂ O (iii) CH ₃ CH ₂ -O-CH ₂ CH ₃ \rightarrow CH ₃ CH ₂ -O-CH ₂ CH ₃ + H (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while -I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.	10.	3. 2		
(ii) CH ₃ CH ₂ — CH ₃ CH ₃ — CH ₃ CH ₄ — CH ₃ CH ₃ — CH ₂ CH ₃ + H ₂ O (iii) CH ₃ CH ₂ — CH ₃ CH ₃ — CH ₃ CH ₄ — CH ₃ CH ₃ + H (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.	20.	H _ V	1/2	
11. (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.		(i) $CH_3-CH_2-O-H + H^- \longrightarrow CH_3-CH_2-O-H$	98,04777	
11. (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.		(*) CH CH - O' + CH CH - O' CH CH + H O		
11. (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.		$(II) CH_3CH_2 - U + CH_3 - CH_2 - U + CH_3 - CH_3 - U + $	1	
11. (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.		n d		
11. (i) In chlorobenzene, each carbon atom is sp ² hybridised / resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.		(iii) $CH_3CH_2 \longrightarrow CH_2CH_3 \longrightarrow CH_3CH_2 - O - CH_2CH_3 + H$	1/2	
resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.		W .		
resonating structures / partial double bond character. (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.	11	(i) In chlorobenzene, each carbon atom is sp ² hybridised./	1	
 (ii) Due to +R effect in chlorobenzene/ difference in hybridization i.e. sp² and sp³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii) Due to formation of planar carbocation/ Carbon in carbocation formed is sp² hybridised. 	11.		1	
hybridization i.e. sp ² and sp ³ respectively/ -I and +R effect oppose each other while –I effect is the only contributing factor in cyclohexane. (iii)Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.			1	
oppose each other while —I effect is the only contributing factor in cyclohexane. (iii)Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.			1	
factor in cyclohexane. (iii)Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.				
(iii)Due to formation of planar carbocation/ Carbon in carbocation formed is sp ² hybridised.				
carbocation formed is sp ² hybridised.			1	
		carbocation formed is sp ² hybridised	1	
12. 2×10^{24} atoms weigh = 300g		carbocation formed is sp. hybridised.		
12. 2×10^{24} atoms weigh = 300g		24		
	12.	2×10^{24} atoms weigh = 300g		



	6.022×10^{23} atoms weigh = (300×6.022)	$2x10^{23}$)/2x10 ²⁴	1
	= 90.3 g		
	$d = \frac{z \times M}{a^3 N_A}$		1/2 + 1/2
	$= 4x90.3/(250x10^{-10})xN_0$ =38.4 gcm ⁻³	(or any other correct method)	1
			1/2
3	$log k = log A - E_a/2.303RT$ $E_a / 2.303 RT = 1.0 \times 10^4 K/T$		*
	$E_a = 1.0 \times 10^4 \times 2.303 \times 8.314$		
	=191471.4 J/mol		1
			1/2
	$t_{1/2} = 0.693 / k$		/2
	k = 0.693/200 min		1
	= 0.0034min ⁻¹		
14.	(i) Adsorption	Absorption	
	Surface phenomena	Bulk phenomena	
	The accumulation of molecular species at the surface rather than in the bulk of a solid or liquid is termed adsorption.	The substance is uniformly distributed throughout the bulk of the solid essentially a bulk phenomenon. (any one difference)	1
	(ii) AlCl ₃ , more positive charge/H	ardy-Schulze rule	1/2 + 1/2
	(iii)Sulphur		1
15.	(i) Zone refining (ii) Leaching / Bayer's process (iii) Reducing agent / to form CC agent.) which acts as a reducing	1 1 1
16.	(i) $E_{\text{cell}}^0 = E_{\text{c}}^0 - E_{\text{a}}^0$ = (-0.44)-(-0.74) V = 0.30 V		1/2
	$E_{cell} = E^{0}_{cell} - \frac{0.059}{n} \log \left[Cr^{3+1} \right]^{2}$		1/2
	$E_{cell} = E^{0}_{cell} - \frac{0.059}{6} \log \frac{[0.01]^{2}}{[0.1]^{3}}$		1
	= 0.30 - (-0.059/6)		1
	=0.3098V (i) ability of oxygen to form multi	inle bond/ nπ-dπ bond	1
17.	(ii) Partially filled d orbitals / due	to comparable energies of his	1
	(iii) due to relative stabilities of the	he f^0 , f^7 and f^{14} occupancies of energies of 7s,6d,5f orbitals.	1



18.	(i) CH ₃ OH, (CH ₃) ₃ C-I	1
	(ii) CH ₃ CH ₂ CH ₂ OH	1
	СООН	1
	(iii)	
19.	(i) C ₆ H ₅ NH ₂ , C ₆ H ₅ N ₂ ⁺ Cl ⁻ , C ₆ H ₅ I	$\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$
	(ii) CH ₃ CN, CH ₃ CH ₂ NH ₂ , CH ₃ CH ₂ NC	$\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$
20.	a. Catalyst / initiator of free radical	1
	 b. Hexamethylene diamine and adipic acid / structure / 	1/2, 1/2
	IUPAC name	
	c. Buna-S <polystyrene<terylene< td=""><td>1</td></polystyrene<terylene<>	1
	OP	
20	OR	
20	Chain initiation steps OOOOO	1
	$C_{s}H_{s} \stackrel{i'}{C} \stackrel{O}{O} \stackrel{O}{C} - C_{s}H_{s} \longrightarrow 2C_{s}H_{s} \stackrel{i'}{C} \stackrel{O}{O} \longrightarrow 2\mathring{C}_{s}H_{s}$	1
	Benzoyl peroxide Phenyl radical $C_aH_a+CH_a=CH_a-\longrightarrow C_aH_a-CH_a-\dot{C}H_a$	
	Chain propagating step	
	$C_8H_5-CH_2-\overset{\bullet}{C}H_2+CH_3=CH_2 \longrightarrow C_8H_5-CH_2-CH_2-\overset{\bullet}{C}H_3$	
	4 66	1
	$C_8H_5 + CH_2 - CH_3 + CH_3 - \dot{C}H_3$	1
	Chain terminating step	
	For termination of the long chain, these free radicals can combine in different ways to form polythene. One mode of termination of	
	chain is shown as under:	
	$C_0H_3 + CH_2 - CH_3 + CH_3 - CH_3$ $\longrightarrow C_0H_3 + CH_3 - CH_3 + C$	1
	$C_0H_5 + CH_2 - \dot{C}H_2 + CH_2 - \dot{C}H_2$	1
21.	(i) β-D glucose and β-D-galactose / glucose and galactose	1/2 , 1/2
	(ii) water soluble ,excreted out of the body	1
	(iii)In nucleotide, phosphoric acid/phosphate group attached to	
	the nucleoside / structures of both nucleotide and nucleoside /	1
	nucleotide= base +sugar + phosphate group, nucleoside= base	
	+sugar.	
22.	d ² sp ³ , Paramagnetic, low spin	1, ½, ½
	2+	94 38.1
	a cı	1
	en Pt	
	Cell Cell	
23.	(i)Aware, concerned or any other correct two values.	1/2 + 1/2
	(ii) Side effects, unknown health problems	1
	(iii) Neurologically active drugs/ stress relievers	1
	Example- valium, equanil	$\frac{1}{2} + \frac{1}{2}$
2.1	(or any other correct two example)	
24	<u>a)</u>	1
	i. Endothermic compound / decomposition of ozone is exothermic	1
	in nature and ΔG is negative / decomposition of ozone is	
	spontaneous. ii. Exists as [PCl ₄] ⁺ [PCl ₆] ⁻	1
	iii. Shows only -1 oxidation state / most electronegative element/	1
	absence of d-orbitals	1
	And the state of t	



	T 6.	
	b) i) ii)	1,1
	F F	
	F Br F	
	OR	
24		
	F ₂ is the stronger oxidising agent than chlorine (a) low enthalpy of dissociation of F-F bond	$\frac{1}{2} \times 4 = 2$
	(b) less negative electron gain enthalpy of F	
	(c) high hydration enthalpy of F ion	
	(b) ingritiyatation citeriality of the	
	ii) low temperature, high pressure and presence of catalyst iii)	1
	a) H ₃ PO ₄ < H ₃ PO ₃ < H ₃ PO ₂	1
	b) BiH ₃ < SbH ₃ < AsH ₃ < PH ₃ < NH ₃	1
25.	$A - C_6H_5COCH_3$	1
	B-C ₆ H ₅ CH ₂ CH ₃	1
	C-C ₆ H ₅ COOH	1
	D ,E -C ₆ H ₅ COONa , CHI ₃	1+1
	OR	
25	a)HCHO + HCHO conc NaOH HCOONa +CH3OH	1
	(or any other example)	
	b)CH ₃ CH=N-NHCONH ₂	1
	c) Stronger -I effect of fluorine ,stronger acid less pk _a / strong	1
	electron withdrawing power of fluorine.	1
	d)CH ₃ CH=CHCH ₂ CHO e)Silver mirror formed on adding ammonical silver nitrate to	1
	propanal and not with propanone (or any other correct test)	1
26.	a) ΔT _f = i K _f w _b x1000	1
20.	$M_b \times W_a$	
		1
	$\Delta T_f = 3 \times (1.86 \times 1.9/95 \times 50) \times 1000$	
	= 2.23K	
	$T_f - \Delta T_f = 273.15 - 2.23 / 273 - 2.23$	
		1
	$T_f = 270.92 \text{ K or } 270.77 \text{ K}$	
	b	
	b) i)2M glucose; More Number of particles / less vapour pressure	$\frac{1}{2} + \frac{1}{2}$
	ii)Reverse Osmosis	1
	OR	
26		
	a)	



$\Delta T_f = \frac{K_f w_b x 1000}{M_b x w_a}$	1
$0.383 = (3.83 \times 2.56/M \times 100) \times 1000$ M=256	1
$S \times x = 256$ $32 \times x = 256$	
x=8 b)	1
i)Shrinks ii)swells	1

Name	Signature	Name	Signature
Dr. (Mrs.) Sangeeta Bhatia		Sh. S.K. Munjal	
Dr. K.N. Uppadhya		Sh. D.A. Mishra	
Prof. R.D. Shukla		Sh. Rakesh Dhawan	
Dr. (Mrs.) Sunita Ramrakhiani		Ms. Nirmala Venkateswaran	
Sh. S. Vallabhan, Principal		Mrs. Deepika Arora	
Mr. K.M. Abdul Raheem		Ms. Minakshi Gupta	
Mrs. Sushma Sachdeva		Mrs. Preeti Kiran	
Ms. Seema Bhatnagar		Sh. Mukesh Kaushik	
Sh. Pawan Singh Meena		Mr. Roop Narayan	
Sh. Praveen Kumar Agrawal		Ms. Garima Bhutani	