Marking scheme – 2017

CHEMISTRY (043)/ CLASS XII

Outside Delhi set (56/1)

Q No.	Value Points	Marks
1.	H ₃ PO ₄	1
2.	2-Bromo-3-methylbut-2-en-1-ol	1
3.	a. Decreases	1/2
	b. No effect	1/2
4.	× ·	1
5.	Gel e.g. cheese, butter, jellies (any one)	1/2 + 1/2
6.	a. p-cresol < Phenol < p-nitrophenol	1
	$>C = C < + H - \ddot{O} + H \Longrightarrow - \ddot{C} - \dot{C} - \dot{C} < + H_2 \ddot{O}$	1
	OR	
6		
	H_3C CH_3 b. CI H_3C CH_3	1
7.	n= given mass / molar mass = 8.1 / 27 mol Number of atoms= $\frac{8.1}{27}$ x 6.022x10 ²³ Number of atoms in one unit cell= 4 (fcc) Number of unit cells = $\left[\frac{8.1}{27}$ x 6.022x10 ²³] / 4	1/2 1/2 1/2
	$= 4.5 \times 10^{22}$	1/2
	Or	1/
	27g of Al contains= 6.022x10 ²³ atoms 8.1g of Al contains =(6.022x10 ²³ / 27) x 8.1	1/2
	No of unit cells = total no of atoms /4	1/2
	$= \left[\frac{8.1}{27} \times 6.022 \times 10^{23}\right] / 4$	1/
	$= \frac{1}{27} \times 0.022 \times 10^{-3} / 4$	1/2
	$=4.5 \times 10^{22}$	1/2

			,
8.		· ·	1,1
		•	
	но	Ci	
	HO HO		
	a.)	b.)	
9.	Mercury cell		1
	Anode: $Zn(Hg) + 2OH \rightarrow ZnO(s) + H_2O$		1/2
10.	Cathode: $HgO + H_2O + 2e^{-} \rightarrow Hg(I) + 2e^{-}$ (i) $Na[Au(CN)_2]$	2OH	1/2
10.	(ii) [Pt(NH ₃) ₄ Cl (NO ₂)]SO ₄		1
11.	(a) Covalent solid / network solid , n	nolecular solid	1/2 + 1/2
	(b) $ZnO \xrightarrow{Heating} Zn^{2+} + 1/2 O_2 + 2e^{-}$		
		erstitial sites and the electrons move	
	to neighbouring voids		1
	(c) Compounds prepared by combin	- •	1/2 + 1/2
	like semiconductors. For eg ZnS, CdS	, CdSe, HgTe (Any one)	/2 + /2
12.	(a) $\Delta G^0 = -nFE^0_{cell}$		1/2
	(a) $\Delta G = -HFE_{cell}$ n=2		/2
	$\Delta G^0 = -2 \times 96500 \text{ C/mol} \times 0.236 \text{ V}$		1/2
	= - 45548 J/mol		
	= -45.548 kJ/mol		1/2
	//		
	(b) Q=It = 0.5 x 2 x 60 x 60 = 3600 C		1/2
	$96500 \text{ C} = 6.023 \times 10^{23} \text{ electrons}$		
	$3600 \text{ C} = 2.25 \times 10^{22} \text{ electrons}$		1
13.	(a) Linkage isomerism		1
	` '	sence of Cl ⁻ , a weak field ligand	
		in [Ni(CN) ₄] ²⁻ , CN ⁻ is a strong	1
	field ligand and pairing tal		
	representation		
	(c) Because of very low CFSE	which is not able to pair up the	1
	electrons.		
14.			
	(a)	Acceptated cells:d	
	Multimolecular colloid (a) Aggregation of large	Associated colloid (a) Aggregation of large	1
	number of small atoms or	number of ions in	
	molecules.	concentrated solutions.	
	(b)		
	Coagulation	Peptization	
	(a) Settling down of colloidal	(a) Conversion of precipitate	1
	particles.	into colloidal sol by	*
		adding small amount of	

		electrolyte.	
	(c)		
		leterogeneous catalysis	
	(a) Reactants and catalyst	(a) Reactants and catalyst are in different phases.	1
	are in same phase.	are in different phases.	_
	OR		
14	(a) Dispersed phase-liquid , Disp	•	1
	(b) Both are surface phenomenon		1
	surface area (or any other correct) (c) Hydrolysis / FeCl ₃ +3H ₂ O	hydrolysis -> Fo(OLI) (col) (2010)	1
15.			1/2
15.	$t = \frac{2.303}{k}$	0g [A]	/2
	K	- [A]	
	2.30	03 . 100	
	$20 \min = \frac{1}{k}$	$\frac{13}{75} \log \frac{100}{75}$ - (i)	1/2
	2 202	100	
	$t = \frac{2.303}{k}$	$\log \frac{100}{25}$ -(ii)	
			1/2
	Divide (i) equatio	n by (ii)	
	$\frac{20}{t} = \frac{2.303}{k} lo$	$g^{\frac{100}{75}}$	1/2
	$\frac{2.303}{k}$ lo	g 100 25	
	= log 4/3		
	log 4		
		1250/ 0.6021	
	t= 96.3 min		1
16.	(i) 1- Bromopentane	(or any other correct procedure)	1
10.	(ii) 2-Bromopentane		1
	(iii) 2-Bromo-2-methylbutane		1
17.	(a) Zone Refining – Impurities are n	nore soluble in the melt than in the	1
	solid metal.		
	(b) Mineral particles are wetted by		1
	particles are wetted by water a		
	(c) Different components of a mixt adsorbent.	ure are differently adsorbed on an	1
18.	(a) (A) CH ₃ CONH ₂		1/2
10.	(a) (A) CH_3CONH_2 (B) CH_3NH_2		/2 1/ ₂
	(C) CH₃NC		1/2
	w. ==		
	NO ₂		
	(b) (A)		1/2
	NH ₂		
			1/2
	(B)		1/ 4

	(C)	
	H—N—C—CH ₃	1/2
19.	(a) H ₂ N-(CH ₂) ₆ -NH ₂ , HOOC-(CH ₂) ₄ -COOH (b)	1 1
	H ₂ N N NH ₂ N NH ₂ NH ₃ NH ₄	
	and HCHO (c) $CH_2=CH-CH=CH_2$, $C_6H_5-CH=CH_2$	1
20.	(a) Anionic detergents are sodium salts of sulphonated long chain alcohols or hydrocarbons / alkylbenzene sulphonate or	
	detergents whose anionic part is involved in cleansing action. (b) Limited spectrum antibiotics are effective against a single organism or disease.	1
	(c) Antiseptics are the chemicals which either kill or prevent growth of microbes on living tissues.	1
21.	(a) Red phosphorous being polymeric is less reactive than white phosphorous which has discrete tetrahedral structure.	1
	(b) They readily accept an electron to attain noble gas configuration. (c) Because of higher oxidation state(+5) of nitrogen in N_2O_5	1
22.	(i) Due to the resonance, the electron pair of nitrogen atom gets delocalised towards carbonyl group / resonating structures. (ii)Because of +I effect in methylamine electron density at nitrogen	1
	increases whereas in aniline resonance takes place and electron density on nitrogen decreases / resonating structures. (iii)Due to protonation of aniline / formation of anilinium ion	1
23.	 (i) Concerned , caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β-pleated sheets 	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
24.	(iv) Vitamin B / B_1 / B_2 / B_6 / C (any two) a. (i) Availability of partially filled d-orbitals / comparable energies of ns	1
	and (n-1) d orbitals (ii) Completely filled d-orbitals / absence of unpaired d electrons cause	1
	weak metallic bonding (iii) Because Mn^{2+} has d^5 as a stable configuration whereas Cr^{3+} is more stable due to stable t^3_{2g}	1
	b) Similarity-both are stable in +3 oxidation state/ both show contraction/ irregular electronic configuration (or any other suitable similarity)	1
	Difference- actinoids are radioactive and lanthanoids are not / actinoids show wide range of oxidation states but lanthanoids don't (or any other correct difference)	1
	OR	
24	a. (i) ${\rm Cr^{3+}}$, half filled ${\rm t^3}_{2g}$ (ii) ${\rm Mn^{3+}}$, due to stable d ⁵ configuration in ${\rm Mn^{2+}}$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$

	(iii) Ti ⁴⁺ , No unpaired electrons			
	b. (i) 2MnO ₄ ⁻ + 16H ⁺ +5S ² → 5S + 2N	∕ln ²⁺ + 8H₂O	½ + ½ 1	
	(ii) $2KMnO_4 \rightarrow K_2MnO_4 + MnO_2 + O_2$	-	1	
25	a) $\Delta T_f = K_f m$		1/2	
	Here, $m = w_2 x 1000 / M_2 X M_1$			
	273.15-269.15 = K _f x 10 x1000/ 342 x90 K _f = 12.3 K kg/mol		1 1/2	
	$\Delta T_f = K_f m$		/2	
	= 12.3 x 10 x1000/ 180x90			
	= 7.6 K			
	$T_f = 273.15 - 7.6 = 265.55 \text{ (or any other correct method)}$			
	b) (i) Number of moles of solute dissolved i	n per kilo gram of the solvent.	1	
	(ii) Abnormal molar mass: If the molar mass	ass calculated by using any of the		
	colligative properties to be different than	theoretically expected molar	1	
	mass			
	0			
25.	(a) $(P_A^0 - P_A)/P_A^0 = (w_B \times M_A)/(M_A^0)$ $\frac{23.8 - P_A}{23.8} = (30 \times M_A)$	$_B \times w_A)$	1/2	
	$\frac{23.8 - P_A}{23.0} = (30 \times 10^{-10})$	18) $/60 \times 846$	1	
	23.8		_	
	$23.8 - P_A = 23.8 \times [(3$	$0 \times 18) / 60 \times 846$		
	A	, , ,	1/2	
	$23.8 - P_A = 0$			
	$P_A = 23.55 m$	ıт Hg	1	
	(b)			
	Ideal solution	Non ideal solution		
	(a) It obeys Raoult's law	(a) Does not obey Raoult's		
	over the entire range of	law over the entire	1+1	
	concentration. $\Lambda H = 0$	range of concentration Λ <i>LI</i>		
	$\int_{\Delta_{mix}} \Delta_{mix} H = 0$	(b) $\Delta_{mix} H$ is not equal		
	$_{(c)} \Delta_{mix} V = 0$	to 0.		
		(c) $\Delta_{mix} V$ is not equal		
		to 0.		
		(any two correct difference)		
26.	a.			
	OH		4	
	CN		1	
	(1)			
	(i) ~			
	(ii)		1	
	\··/			

	(iii) CH₃-CH=CH-CHO	1
	b. (i) Tollen's reagent test: Add ammoniacal solution of silver nitrate	
	(Tollen's Reagent) in both the solutions. Butanal gives silver mirror	1
	whereas Butan-2-one does not.	1
	(ii) Add neutral FeCl ₃ in both the solutions, phenol forms violet colour	
	but benzoic acid does not.	1
	(or any other correct test)	-
	OR	
26	(a) (i)Étard reaction	
	OVI	
	$\begin{array}{c} \text{CH}_{3} \\ + \text{ CrO}_{2}\text{Cl}_{2} \xrightarrow{\text{CS}_{2}} \end{array} \begin{array}{c} \text{CH(OCrOHCl}_{2})_{2} \\ \xrightarrow{\text{H}_{3}\text{O}} \end{array} \begin{array}{c} \text{CHO} \end{array}$	
	$+ CrO_2Cl_2 \xrightarrow{\longrightarrow} $	
	Tolue. Chromium complex Benzaldehyde	
	or	
	CHO CHO	1
	CH, (i) CrO2Cl2, CS2	1
	$ \longrightarrow \hspace{1cm} \bigvee$	
	Toluene (ii) H3O+ Benzaldehyde	1
	• • • • • • • • • • • • • • • • • • • •	
	(ii)Stephen reaction	
	(ii)Stephen reaction	
	$RCN + SnCl_2 + HCl \longrightarrow RCH = NH \xrightarrow{H_3O} RCHO$	
	Or	
		1
	(i) SnCl ₂ + HCl	1
	(i) SnCl₂ + HCl RCN ————————————————————————————————————	1
	(i) SnCl ₂ + HCl	1
	(i) SnCl₂ + HCl RCN ————————————————————————————————————	1
	(i) SnCl₂ + HCl RCN → RCHO (ii) H₃O+	1
	(i) SnCl₂ + HCl RCN → RCHO (ii) H₃O+	1
	(i) SnCl₂ + HCl RCN → RCHO (ii) H₃O+	1
	(i) SnCl₂ + HCl RCN → RCHO (ii) H₃O+	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COCI CHO SOCl ₂ Rosenmund's	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COCl CHO SOCl ₂ Rosenmund's reduction	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH COCI Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde	
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH COCI Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde acid RCHO	
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH COCI Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde	
	(i) SnCl ₂ + HCl RCN (ii) H ₃ O+ RCHO (ii) H ₃ O+ (b) (i) COCl COOH COCH SOCl ₂ Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde (ii)	
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH COCI Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde acid RCHO	
	(i) SnCl ₂ + HCl RCN (ii) H ₃ O+ RCHO (ii) H ₃ O+ (b) (i) COCl COOH COCH SOCl ₂ Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde (ii)	1
	(ii) SnCl ₂ + HCl RCN (ii) H ₃ O+ RCHO (iii) H ₃ O+ Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde (ii) COCH ₃ COONa COOH	
	(i) SnCl ₂ + HCl RCN (ii) H ₃ O+ RCHO (ii) H ₃ O+ (b) (i) COCl COOH COCH SOCl ₂ Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde (ii)	1
	(ii) SnCl ₂ + HCl RCN (ii) H ₃ O+ RCHO (iii) H ₃ O+ Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde (ii) COCH ₃ COONa COOH	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH SOCl ₂ Benzoic Benzoyl chloride (ii) COCH ₃ COONa COOH L ₂ /NaOH H ₃ O+ COOH	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH SOCl ₂ Benzoic Benzoic acid (ii) COCH ₃ COONa COOH Acetophenone Sodium Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde COOH Benzoic Benzoic Benzoic	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH SOCl ₂ Benzoic Benzoyl chloride (ii) COCH ₃ COONa COOH L ₂ /NaOH H ₃ O+ COOH	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH SOCl ₂ Benzoic Benzoic acid (ii) COCH ₃ COONa COOH Acetophenone Sodium Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde COOH Benzoic Benzoic Benzoic	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH SOCl ₂ Benzoic Benzoic acid (ii) COCH ₃ COONa COOH Acetophenone Sodium Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde COOH Benzoic Benzoic Benzoic	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH SOCl ₂ Benzoic Benzoic acid (ii) COCH ₃ COONa COOH Acetophenone Sodium Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde COOH Benzoic Benzoic Benzoic	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH SOCl ₂ Benzoic Benzoic acid (ii) COCH ₃ COONa COOH Acetophenone Sodium Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde COOH Benzoic Benzoic Benzoic	1
	(i) SnCl ₂ + HCl RCN RCHO (ii) H ₃ O+ (b) (i) COOH SOCl ₂ Benzoic Benzoic acid (ii) COCH ₃ COONa COOH Acetophenone Sodium Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde COOH Benzoic Benzoic Benzoic	1

(c) $CH_3COOH \xrightarrow{Cl_2/P} CH_2COOH \xrightarrow{KOH(Aq)} CH_2COOH$	1
Cl OH	
(or any other correct method)	

1	Dr. (Mrs.) Sangeeta Bhatia	12	2	Sh. S. Vallabhan	
2	Dr. K.N. Uppadhya	13	3	Dr. Bhagyabati Nayak	
	Dr. Kiiv. Oppdanya			Dr. Briagyabati Nayak	
3	Prof. R.D. Shukla	14	- 1	Ms. Anila Mechur Jayachandran	
4	Sh. S.K. Munjal	15	5	Mrs. Deepika Arora	
5	Sh. D.A. Mishra	16	6	Ms. Seema Bhatnagar	
6	Sh. Rakesh Dhawan	17	7	Mrs. Sushma Sachdeva	
7	Dr. (Mrs.) Sunita Ramrakhiani	18	8	Dr. Azhar Aslam Khan	
8	Mrs. Preeti Kiran	19	9	Mr. Roop Narain Chauhan	
9	Ms. Neeru Sofat	20		Mr. Mukesh Kumar Kaushik	
10	Sh. Pawan Singh Meena	21		Ms. Abha Chaudhary	
11	Mrs. P. Nirupama Shankar	22	2	Ms. Garima Bhutani	

Marking scheme – 2017

CHEMISTRY (043)/ CLASS XII

Outside Delhi set (56/2)

Q.No	Value points	Marks
1.	a. Decreases	1/2
	b. No change	1/2
2.	Sol : example- paints, cell fluids (any one)	1/2 + 1/2
	3-phenyl-prop-2-en-1-ol	1
3.		
4.	H ₂ SO ₄	1
	X	1
5.		
6.	(i) [Cr(en) ₃]Cl ₃	1
0.	(ii) $K_2[Zn(OH)_4]$	1
	(17)	_
	(a)	
7.		
		1
	S	
	0 0 0	
	ОН	
	(b)	
	F	
	CI	1
	F	
8.	Lead storage battery	1
	Anode: $Pb_{(s)}+SO_4^{2-}$ (aq) $\rightarrow PbSO_{4(s)} + 2e^{-}$	1/2
	Cathode: $PbO_2 + SO_4^{2^-}_{(aq)} + 4H^+ + 2e^- \rightarrow PbSO_{4(s)} + 2 H_2O_{(l)}$	1/2
9.	n= given mass / molar mass = 8.1 / 27 mol	1/2
	Number of atoms= $\frac{8.1}{27}$ x 6.022x10 ²³	1/2
	Number of atoms in one unit cell= 4 (fcc)	
	Number of unit cells = $\left[\frac{8.1}{27} \times 6.022 \times 10^{23}\right] / 4$	1/2
	$= 4.5 \times 10^{22}$	1/2
	= 4.0 x 10	

	0.	
	Or 23	
	27g of Al contains= 6.022x10 ²³ atoms	1/2
	8.1g of Al contains =(6.022x10 ²³ / 27) x 8.1	1/2
	No of unit cells = total no of atoms /4	/-
	$= \left[\frac{8.1}{27} \times 6.022 \times 10^{23}\right] / 4$	1/
	-[₂₇ × 0.022×10]7 +	1/2
	$=4.5 \times 10^{22}$	1/2
10.	a. p-cresol < Phenol < p-nitrophenol	1
	**	_
	The Hand	1
	$>C = C < + H - \ddot{O} + H \Longrightarrow - \ddot{C} - \ddot{C} < + H^{2}\ddot{O}$	1
	b.	
	U.	
	OR	
10		
	0	1
	H ₃ C CH ₂	
	a. OH3	
	b.	
	CI	
		1
	H₃C、	
	\sim CH ₃	
	(a)Metal is converted into volatile compound which on strong heating is	1
11.	decomposed to give pure metal.	_
11.		1
	(b)It acts as a leaching agent / forms soluble complex with Ag	1
	(c)Enhances non-wettability of mineral particles. For e.gPine oil, Fatty acids,	
	xanthates (Any one).	1/2 + 1/2
	(a) (A) CH ₃ CONH ₂	1/2
	(B) CH ₃ NH ₂	1/2
12.	(C) CH ₃ NC	1/2
14.	(6) 6113116	/2
	NO ₂	
	(b) (A)	1/2
	NH ₂	
	(D)	1/2
	(B)	- =
	(C)	1/
		1/2
	H-Ņ- <mark>C</mark> -CH ₃	

		1
12	(a) $\Delta G^0 = -nFE^0_{cell}$	1/2
13.	n= 2 ΔG^0 = - 2 x 96500 C /mol x 0.236 V = - 45548 J/mol	1/2
	= -45.548 kJ/mol	1/2
	(b) Q=It = 0.5 x 2 x 60 x 60 = 3600 C	1/2
	96500 C = 6.023 x 10 ²³ electrons 3600 C = 2.25 x 10 ²² electrons	1
	(i) Due to the resonance, the electron pair of nitrogen atom gets delocalised towards carbonyl group / resonating structures. (ii)Because of +I effect in methylamine electron density at nitrogen	1
14.	increases whereas in aniline resonance takes place and electron density	1
	on nitrogen decreases / resonating structures. (iii)Due to protonation of aniline / formation of anilinium ion	1
	(a) Red phosphorous being polymeric is less reactive than white phosphorous which has discrete tetrahedral structure.	1
15	(b) They readily accept an electron to attain noble gas configuration.	1
	(c) Because of higher oxidation state(+5) of nitrogen in N ₂ O ₅	1
16	(a) Anionic detergents are sodium salts of sulphonated long chain alcohols or hydrocarbons / alkylbenzene sulphonate or detergents whose anionic part is involved in cleansing action.	1
	(b) Narrow spectrum antibiotics- which are effective against either gram	1
	positive or gram negative bacteria.	
	(c) Chemical compounds which are used for the treatment of excess acid produced in the stomach.	1
	(a) CH ₂ =CHCl (b)	1
17	$H_2N \nearrow N \longrightarrow NH_2$ $N \nearrow N$	1
	and HCHO (c)CH ₂ =CH-CH=CH ₂ , CH ₂ =CHCN	1
18.	(i) 1- Bromopentane	1
	(ii) 2-Bromopentane	1
	(iii) 2-Bromo-2-methylbutane	1

	$t = \frac{2.1}{2}$	$\frac{303}{k} \log \frac{[A]o}{[A]}$	1/2
19.	20 min = $\frac{2.303}{k} log \frac{100}{75}$ - (i)		1/2
	$t = \frac{2.303}{k} \log \frac{100}{25} -\text{(ii)}$		<i>y</i> ₂
	Divide (i) equa	tion by (ii)	
	$\frac{20}{t} = \frac{2.303}{k}$	$log \frac{100}{75}$	1/2
	2.303	$-\log \frac{100}{25}$	
	= log 4/	3	
	log 4	0.1250/ 0.6021	
	t= 96.3 mi		1
		(or any other correct procedure)	
	(a)		
	Multimolecular colloid	Associated colloid	
20	(a) Aggregation of large	(a) Aggregation of large	1
	number of small atoms or	number of ions in	
	molecules.	concentrated solutions.	
	(b)		
	Coagulation	Peptization	
	(a) Settling down of colloidal	(a) Conversion of precipitate	
	particles.	into colloidal sol by	1
		adding small amount of	
		electrolyte.	
	(c)		
	Homogenous catalysis	Heterogeneous catalysis	
	(a) Reactants and catalyst	(a) Reactants and catalyst	
	are in same phase.	are in different phases.	
			1
		OR	
20	(a) Diamourand where the thing		1
20	(a) Dispersed phase-liquid , D		1
	surface area (or any other co	on / both increase with increase in	1
		^{hydrolysis} -→ Fe(OH) ₃ (soI)+3HCl	1

21.	(a) Linkage isomerism	1
	 (b) In [NiCl₄]²⁻, due to the presence of Cl⁻, a weak field ligand no pairing occurs whereas in [Ni(CN)₄]²⁻, CN⁻ is a strong field ligand and pairing takes place / diagrammatic representation (c) Because of very low CFSE which is not able to pair up the 	1
	electrons.	1
22.	(a) Benzene – molecular solid	1/2
	Silver − metallic solid (b) Size of Ag ⁺ ion is smaller than Na ⁺ ion (c) p- type	½ 1 1
23.	(i) Concerned , caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₆ / C (any two)	1/2 + 1/2 1 1/2 + 1/2 1/2 + 1/2
24	a) $\Delta T_f = K_f m$ Here , $m = w_2 x 1000 / M_2 X M_1$ $273.15-269.15 = K_f x 10 x 1000 / 342 x 90$ $K_f = 12.3 K kg/mol$ $\Delta T_f = K_f m$ = 12.3 x 10 x1000 / 180x90 = 7.6 K $T_f = 273.15 - 7.6 = 265.55 K$ (or any other correct method) b) (i) Number of moles of solute dissolved in per kilo gram of the solvent. (ii) Abnormal molar mass: If the molar mass calculated by using any of the colligative properties to be different than theoretically expected molar mass.	1 ½ 1 1 1
	OR	

24	$(P_A^0 - P_A)/P_A^0 = (w_B \times M_A)/(M_B^0)$	1/2	
	$\frac{23.8 - P_A}{23.8} = (30.2)$	1	
	$23.8 - P_A = 23.8 \times [($	1/2	
	$23.8 - P_A = P_A = 23.55$ (b)	1	
	Ideal solution	Non ideal solution	
	(a) It obeys Raoult's law over the entire range of concentration.	(a) Does not obey Raoult's law over the entire range of concentration.	1+1
	(b) $\Delta_{mix} H = 0$ (c) $\Delta_{mix} V = 0$		
		(c) $\Delta_{mix} V$ is not equal to 0. (any two correct difference)	
25	a. OH CN	1	
	(ii) (iii) CH ₃ -CH=CH-CHO b. (i) Tollen's reagent test: Add ammoniac Reagent) in both the solutions. Butanal gi	1 1 1	
	one does not. (ii) Add neutral FeCl ₃ in both the solution benzoic acid does not.	1	
	C		

25 (a) (i)Étard reaction	
$CH_{3} + CrO_{2}Cl_{2} \xrightarrow{CS_{2}} CH(OCrOHCl_{2})_{2} \xrightarrow{H_{3}O} CHO$ $Chromium complex Benzaldehyde$ Of	
Toluene (i) CrO2Cl2, CS2 (ii) H3O+ Benzaldehyde	1
(ii)Stephen reaction $RCN + SnCl_2 + HCI \longrightarrow RCH = NH \xrightarrow{H_3O} RCHO$ Or (i) $SnCl_2 + HCI$ $RCN \longrightarrow RCHO$ (ii) H_3O+	1
(b) (i) COOH COCI CHO SOCI ₂ Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde (ii)	1
$\begin{array}{c} \text{COCH}_3 \\ \hline \\ \text{Acetophenone} \end{array} \begin{array}{c} \text{COONa} \\ \hline \\ \text{Sodium} \\ \text{benzoate} \end{array} \begin{array}{c} \text{COOH} \\ \hline \\ \text{Benzoic} \\ \text{acid} \end{array}$	1
(c) $CH_3COOH \xrightarrow{Cl_2/P} CH_2COOH \xrightarrow{KOH(Aq)} CH_2COOH$	1
(n-1) d orbitals	1

	(ii) Completely filled d-orbitals / absence of unpaired d electrons cause	1
	weak metallic bonding	
	(iii) Because Mn ²⁺ has d ⁵ as a stable configuration whereas Cr ³⁺ is	1
	more stable due to stable t^3_{2g}	
	b) Similarity-both are stable in +3 oxidation state/ both show	
	contraction/ irregular electronic configuration (or any other suitable	1
	similarity)	
	Difference- actinoids are radioactive and lanthanoids are not / actinoids	
	show wide range of oxidation states but lanthanoids don't (or any other	1
	correct difference)	
	OR	
26	a. (i) Cr^{3+} , half filled t^3_{2g}	1/2 + 1/2
	(ii) Mn ³⁺ , due to stable d ⁵ configuration in Mn ²⁺	1/2 + 1/2
	(iii) Ti ⁴⁺ , No unpaired electrons	1/2 + 1/2
	b. (i) $2MnO_4^- + 16H^+ + 5S^2 \rightarrow 5S + 2Mn^{2+} + 8H_2O$	1
	(ii) $2KMnO_4 \rightarrow K_2MnO_4 + MnO_2 + O_2$	1

1	Dr. (Mrs.) Sangeeta Bhatia	12	Sh. S. Vallabhan
2	Dr. K.N. Uppadhya	13	Dr. Bhagyabati Nayak
3	Prof. R.D. Shukla	14	Ms. Anila Mechur Jayachandran
4	Sh. S.K. Munjal	15	Mrs. Deepika Arora
5	Sh. D.A. Mishra	16	Ms. Seema Bhatnagar
6	Sh. Rakesh Dhawan	17	Mrs. Sushma Sachdeva
7	Dr. (Mrs.) Sunita Ramrakhiani	18	Dr. Azhar Aslam Khan
8	Mrs. Preeti Kiran	19	Mr. Roop Narain Chauhan
9	Ms. Neeru Sofat	20	
10	Sh. Pawan Singh Meena	21	,
11	Mrs. P. Nirupama Shankar	22	Ms. Garima Bhutani

Marking scheme – 2017

CHEMISTRY (043)/ CLASS XII

Outside Delhi set (56/3)

Q No.	Value Points	Mark s
1.	CI	1
2.	a. Decreases	1/2 1/2
	b. No effect	
3.	HIO ₃	1 1/ 1/
4.	Foam ; e.g. froth, whipped cream, soap lather(any one)	1/2 + 1/2
5.	2-Methoxy-2-methylpropane	1
6.	a. F. Br. F.	1,1
7.	Dry Cell / Leclanche cell	1
	Anode: $Zn_{(s)} \rightarrow Zn^{2+} + 2e^{-}$	1/2
	Cathode: $MnO_2 + NH_4^+ + e^- \rightarrow MnO(OH) + NH_3$	1/2
8.	a. p-cresol < Phenol < p-nitrophenol	1
	b. $C = C < + H - \ddot{O} + H \Longrightarrow - \ddot{C} - \ddot{C} < + H_2 \ddot{O}$	1
	OR	
8		
	O	1
	H ₃ C	
	a. CH ₃	
	b.	
	CI	
	H.C. I	1
	H ₃ C CH ₃	
9.	a. K ₃ [Al(C ₂ O ₄) ₃]	1
	b. [Co Cl ₂ (en) ₂] ⁺	1
10.	n= given mass / molar mass	1/2
	= 8.1 / 27 mol	1/2
	Number of atoms= $\frac{8.1}{27}$ x 6.022x10 ²³	

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96500 C = 6.023 x 10 ²³ electrons 3600 C = 2.25 x 10 ²² electrons 3600 C = 2.25 x 10 ²² electrons 14. a. Na ₂ SO ₄ : Ionic, H ₂ : Molecular b. Impurity defect / Schottky defect c. In ferrimagnetism ,domains / magnetic moments are aligned in opposite direction in unequal numbers while in antiferromagnetic the domains align in opposite direction in equal numbers so they cancel magnetic moments completely ,net magnetism is zero / diagrammatic explanation. 15. a. On passing current through the electrolytic cell , the pure metal gets deposited on the cathode. b. Evolution of SO ₂ gas c. It selectively prevents one of the sulphide ores from coming to the froth. 16. (a) (A) CH ₃ CONH ₂ (B) CH ₃ NH ₂ (C) CH ₃ NC (b) (A) (b) (A) (c) (b) (A) (c) (d) (e) (e) (e) (e) (f) (ii) Due to the resonance, the electron pair of nitrogen atom gets delocalised towards carbonyl group / resonating structures. (iii) Because of +1 effect in methylamine electron density at nitrogen increases whereas in aniline resonance takes place and electron density on nitrogen decreases / resonating structures. (iii) Due to protonation of aniline / formation of anilinim ion 18. (a) Red phosphorous being polymeric is less reactive than white phosphorous which has discrete tetrahedral structure. (b) They readily accept an electron to attain noble gas configuration. (c) (c) (c) Because of higher oxidation state(+5) of nitrogen in N ₂ O ₅ a. Cationic detergents are quarternary ammonium salts of amines with acetates, chlorides or bromides as anions / detergents whose cationic part is involved in cleansing action. b. Broad spectrum antibiotics: Antibiotics which kill or inhibit a wide range of Gram-positive and Gram-negative bacteria. c. Chemical compounds used for the treatment of stress and mild or severe mental diseases.		= 3600 C	
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wide range of Gram-positive and Gram-negative bacteria. c. Chemical compounds used for the treatment of stress and mild or severe mental diseases.			1
or severe mental diseases.		wide range of Gram-positive and Gram-negative bacteria.	1
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	20		1

and HCHO b. $ \begin{array}{cccccccccccccccccccccccccccccccccc$		and HCHO b. H	1
b. $\frac{1}{c} = \frac{1}{c} - \frac{1}{c} = \frac{1}{c}$ c. $\frac{1}{c} = \frac{1}{c} - \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} - \frac{1}{c} = \frac{1}{c}$ c. $\frac{1}{c} = \frac{1}{c} - \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c}$ $\frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{c} = \frac{1}{$		and HCHO b. H	1
and HCHO b.		and HCHO b. H	1
21. (i) 1- Bromopentane (ii) 2-Bromopentane (iii) 2-Bromo-2-methylbutane 1 22. $t = \frac{2.303}{k} \log \frac{[A]o}{[A]}$ $t = \frac{2.303}{k} \log \frac{100}{75} - \text{(i)}$ $t = \frac{2.303}{k} \log \frac{100}{25} - \text{(ii)}$ 20 Divide (i) equation by (ii) $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \log 4/3$ $\log 4$ $20/t = 0.1250/0.6021$ $t = 96.3 \text{ min}$ (or any other correct procedure) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two) (ii)		c. H C	
21. (i) 1- Bromopentane (ii) 2-Bromopentane (iii) 2-Bromopentane (iii) 2-Bromopentane (iii) 2-Bromo-2-methylbutane 1 22. $t = \frac{2.303}{k} \log \frac{[A]o}{[A]}$ $20 \min = \frac{2.303}{k} \log \frac{100}{75} - \text{(i)}$ $t = \frac{2.303}{k} \log \frac{100}{25} - \text{(ii)}$ $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{\log 4} \log \frac{100}{25}$ $= \log 4/3$ $\log 4/3$ $\log 4$ $20/t = 0.1250/0.6021$ $t = 96.3 \min $ (or any other correct procedure) 23. (i) Concerned , caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin $B / B_1 / B_2 / B_6 / C$ (any two)		c. H H H H H H H H H H H H H H H H H H H	
21. (i) 1- Bromopentane (ii) 2-Bromopentane (iii) 2-Bromopentane (iii) 2-Bromopentane (iii) 2-Bromo-2-methylbutane 1 22. $t = \frac{2.303}{k} \log \frac{[A]o}{[A]}$ $20 \min = \frac{2.303}{k} \log \frac{100}{75} - \text{(i)}$ $t = \frac{2.303}{k} \log \frac{100}{25} - \text{(ii)}$ $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{\log 4} \log \frac{100}{25}$ $= \log 4/3$ $\log 4/3$ $\log 4$ $20/t = 0.1250/0.6021$ $t = 96.3 \min $ (or any other correct procedure) 23. (i) Concerned , caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin $B / B_1 / B_2 / B_6 / C$ (any two)		c. H H H H H H H H H H H H H H H H H H H	
(ii) 2-Bromopentane (iii) 2-Bromo-2-methylbutane 1 22. $t = \frac{2.303}{k} \log \frac{[A]o}{[A]}$ $20 \min = \frac{2.303}{k} \log \frac{100}{75} - \text{(i)}$ $t = \frac{2.303}{k} \log \frac{100}{25} - \text{(ii)}$ $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{25}$ $\frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \log 4/3$ $\log 4$ $20/t = 0.1250/0.6021$ $t = 96.3 \min$ (or any other correct procedure) 1 23. (i) Concerned , caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two)			
(ii) 2-Bromopentane (iii) 2-Bromo-2-methylbutane 1 22. $t = \frac{2.303}{k} \log \frac{[A]o}{[A]}$ $20 \min = \frac{2.303}{k} \log \frac{100}{75} - \text{(i)}$ $t = \frac{2.303}{k} \log \frac{100}{25} - \text{(ii)}$ $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{25}$ $\frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \log 4/3$ $\log 4$ $20/t = 0.1250/0.6021$ $t = 96.3 \min$ (or any other correct procedure) 1 23. (i) Concerned , caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two)			
(iii) 2-Bromo-2-methylbutane $t = \frac{2.303}{k} \log \frac{[A]o}{[A]}$ $20 \min = \frac{2.303}{k} \log \frac{100}{75} - \text{(i)}$ $t = \frac{2.303}{k} \log \frac{100}{25} - \text{(ii)}$ $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{25} - \text{(ii)}$ $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \log 4/3$ $\log 4$ $20/t = 0.1250/0.6021$ $t = 96.3 \min \qquad \text{(or any other correct procedure)}$ 23. (i) Concerned , caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two)	21.	(II) 2-Bromopentane	
22. $t = \frac{2.303}{k} \log \frac{[A]o}{[A]}$ $20 \min = \frac{2.303}{k} \log \frac{100}{75} - (i)$ $t = \frac{2.303}{k} \log \frac{100}{25} - (ii)$ $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{25}$ $\frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \frac{\log \sqrt{3}}{\log 4}$ $20/t = 0.1250/0.6021$ $t = 96.3 \min$ (or any other correct procedure) 23. (i) Concerned, caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two)			
$20 \min = \frac{2.303}{k} \log \frac{100}{75} - (ii)$ $t = \frac{2.303}{k} \log \frac{100}{25} - (ii)$ $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \frac{\log 4/3}{\log 4}$ $20/t = 0.1250/0.6021$ $t = 96.3 \min$ $(or any other correct procedure)$ $23. (i) Concerned, caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) Carlelix and \beta-pleated sheets (iv) Vitamin B / B_1/B_2/B_6/C (any two)$	22.		
$t = \frac{2.303}{k} \log \frac{100}{25} \text{-(ii)}$ $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \log 4/3$ $\log 4$ $20/t = 0.1250/0.6021$ $t = 96.3 \text{ min}$ $(\text{or any other correct procedure})$ 23. (i) Concerned, caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two)		$t = \frac{1}{k} \log \frac{1}{[A]}$	
$t = \frac{2.303}{k} \log \frac{100}{25} \text{-(ii)}$ $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \log 4/3$ $\log 4$ $20/t = 0.1250/0.6021$ $t = 96.3 \text{ min}$ $(\text{or any other correct procedure})$ 23. (i) Concerned, caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two)		0.000	
Divide (i) equation by (ii) $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \frac{\log 4/3}{\log 4}$ $20/t = 0.1250/0.6021$ $t = 96.3 \text{ min}$ (or any other correct procedure) $23. \qquad \text{(i) Concerned , caring, socially alert, leadership (or any other 2 values)}$ (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two)		$20 \min = \frac{2.303}{k} \log \frac{100}{75} - (i)$	1/2
Divide (i) equation by (ii) $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \frac{\log 4/3}{\log 4}$ $20/t = 0.1250/0.6021$ $t = 96.3 \text{ min}$ (or any other correct procedure) $23. \qquad \text{(i) Concerned , caring, socially alert, leadership (or any other 2 values)}$ (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two)		2 202 100	
Divide (i) equation by (ii) $\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \frac{\log 4/3}{\log 4}$ $20/t = 0.1250/0.6021$ $t = 96.3 \text{ min}$ (or any other correct procedure) $(i) \text{ Concerned , caring, socially alert, leadership (or any other 2 values)}$ (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two)		$t = \frac{2.303}{k} \log \frac{1}{25} - \text{(ii)}$	1/4
$\frac{20}{t} = \frac{2.303}{k} \log \frac{100}{75}$ $\frac{2.303}{k} \log \frac{100}{25}$ $= \frac{\log 4}{3}$ $20/t = 0.1250/0.6021$ $t = 96.3 \text{ min}$ (or any other correct procedure) 23. (i) Concerned, caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two) 24. a. OH			/2
$\frac{2.303}{k} \log \frac{100}{25}$ $= \frac{\log 4/3}{\log 4}$ $20/t = 0.1250/ 0.6021$ $t = 96.3 \text{ min}$ (or any other correct procedure) 23. (i) Concerned, caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two) 24. a. OH		Divide (i) equation by (ii)	
$\frac{2.303}{k} \log \frac{100}{25}$ $= \frac{\log 4/3}{\log 4}$ $20/t = 0.1250/ 0.6021$ $t = 96.3 \text{ min}$ (or any other correct procedure) 23. (i) Concerned, caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two) 24. a. OH		$\frac{20}{100} = \frac{2.303}{1000} \log \frac{100}{1000}$	1/2
$= \frac{\log 4/3}{\log 4}$ $20/t = 0.1250/0.6021$ $t = 96.3 \text{ min}$ $(\text{or any other correct procedure})$ 23. (i) Concerned , caring, socially alert, leadership (or any other 2 values) (ii) Starch (iii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two) 24. a. OH			/2
		$\frac{2.303}{k} \log \frac{100}{25}$	
$20/ t = 0.1250/ 0.6021$ $t = 96.3 \text{ min}$ $(or any other correct procedure)$ $23. \qquad (i) \text{ Concerned , caring, socially alert, leadership (or any other 2 values)}$ $(ii) \text{ Starch}$ $(iii) \text{ α -Helix and β-pleated sheets}$ $(iv) \text{ Vitamin B } / \text{ B}_1 / \text{ B}_2 / \text{ B}_6 / \text{ C (any two)}$ $24. \qquad a.$		= <u>log 4/3</u>	
$t=96.3 \text{ min} \\ \text{(or any other correct procedure)} \\ 23. \qquad \text{(i) Concerned , caring, socially alert, leadership (or any other 2 values)} \\ \text{(ii) Starch} \\ \text{(iii) } \alpha \text{ -Helix and } \beta \text{-pleated sheets} \\ \text{(iv) Vitamin B } / B_1 / B_2 / B_6 / C \text{ (any two)} \\ 24. \qquad a. \\ OH \\ OH$		-	
(or any other correct procedure) 23. (i) Concerned , caring, socially alert, leadership (or any other 2 $\frac{1}{2} + \frac{1}{2}$ values) (ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two) 24. a. OH			1
values) (ii) Starch (iii) α -Helix and β-pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two) 24. a. OH		(or any other correct procedure)	
(ii) Starch (iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two)	23.		1/2 + 1/2
(iii) α -Helix and β -pleated sheets (iv) Vitamin B / B ₁ / B ₂ / B ₆ / C (any two) 24. a. OH		(ii) Starch	1
24. a. OH			1/2 + 1/2
OH 1	2.4		1/2 + 1/2
	24.		
CN			1
		CN	
(i)		(i) ~	
1			1
(ii)		(ii)	1
(iii) CH ₃ -CH=CH-CHO			1
b. (i) Tollen's reagent test: Add ammoniacal solution of silver nitrate			1
(Tollen's Reagent) in both the solutions. Butanal gives silver mirror whereas Butan-2-one does not.			
Wildian E one does not		(ii) Add neutral FeCl ₃ in both the solutions, phenol forms violet colour	

	but benzoic acid does not.	1
	(or any other correct test) OR	
2 4	(a) (i)Étard reaction CH3 + CrO2Cl2 CS2 CH(OCrOHCl3)2 H3O Or	
	Toluene (i) CrO2Cl2, CS2 (ii) H3O+ Benzaldehyde	1
	(ii)Stephen reaction $RCN + SnCl_2 + HCl \longrightarrow RCH = NH \xrightarrow{H_3 {\bullet}} RCHO$ Or (i) $SnCl_2 + HCl$ $RCN \longrightarrow RCHO$ (ii) H_3O+	1
	(b) (i) COOH COCI CHO SOCI ₂ Rosenmund's reduction Pd/BaSO ₄ Benzaldehyde (ii)	1
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1
	(c) $CH_3 COOH \xrightarrow{Cl_2/p} CH_2 COOH \xrightarrow{KOH(Aq)} CH_2 COOH$	1
25.	a. (i) Availability of partially filled d-orbitals / comparable energies of ns	1
	and (n-1) d orbitals (ii) Completely filled d-orbitals / absence of unpaired d electrons cause weak metallic bonding	1

	1	1 .
	(iii) Because Mn ²⁺ has d ⁵ as a stable configuration whereas Cr ³⁺	1
	is more stable due to stable t^3_{2g}	
	b) Similarity-both are stable in +3 oxidation state/ both show	
	contraction/irregular electronic configuration (or any other	1
	suitable similarity)	
	Difference- actinoids are radioactive and lanthanoids are not /	
		1
	actinoids show wide range of oxidation states but lanthanoids	_
	don't (or any other correct difference)	
	OB	
	OR OR	1/2 + 1/2
	a. (i) Cr^{3+} , half filled t^3_{2g}	
	(ii) Mn ³⁺ , due to stable d ⁵ configuration in Mn ²⁺	1/2 + 1/2
	(iii) Ti ⁴⁺ , No unpaired electrons	1/2 + 1/2
	b. (i) $2MnO_4^- + 16H^+ + 5S^2 \rightarrow 5S + 2Mn^2 + 8H_2O$	1
	(ii) $2KMnO_4 \rightarrow K_2MnO_4 + MnO_2 + O_2$	1
26.	a) $\Delta T_f = K_f m$	1/2
	Here, $m = w_2 x 1000 / M_2 X M_1$	
	273.15-269.15 = K _f x 10 x1000/ 342 x90	1
	$K_f = 12.3 \text{ K kg/mol}$	1/2
		/2
	$\Delta T_f = K_f m$	
	= 12.3 x 10 x1000/ 180x90	
	= 7.6 K	
	$T_f = 273.15 - 7.6 = 265.55 \text{ K}$ (or any other correct method)	1
	b) (i) Number of moles of solute dissolved in per kilo gram of the solvent.	1
	(ii) Abnormal molar mass: If the molar mass calculated by using any of	_
	the colligative properties to be different than theoretically expected	1
	the conigative properties to be unferent than theoretically expected	1
	molar mass _.	
	OR	
	$(P_A^0 - P_A)/P_A^0 = (w_B \times M_A)/(M_B \times w_A)$	1/2
	$23.8 - P_A$	
	$\frac{23.8 - P_A}{23.8} = (30 \times 18) / 60 \times 846$	1
	23.8	_
	$23.8 - P_A = 23.8 \times [(30 \times 18) / 60 \times 846]$	
	$25.0 - P_A = 25.0 \times [(50 \times 10) / 00 \times 040]$	1/2
		/2
	$23.8 - P_A = 0.2532$	
	$P_A = 23.55 mm Hg$	1
		1

(b)			
	Ideal solution	Non ideal solution	1+1
	(a) It obeys Raoult's law	(a) Does not obey Raoult's	
	over the entire range of	law over the entire	
	concentration.	range of concentration.	
	(b) $\Delta_{mix} H = 0$	(b) $\Delta_{mix} H$ is not equal	
	$_{(c)} \Delta_{mix} V = 0$	to 0.	
		(c) $\Delta_{mix} V$ is not equal	
		to 0.	
		(any two correct difference)	

	_			
1	Dr. (Mrs.) Sangeeta Bhatia	12	Sh. S. Vallabhan	
2	Dr. K.N. Uppadhya	13	Dr. Bhagyabati Nayak	
3	Prof. R.D. Shukla	14	Ms. Anila Mechur	
			Jayachandran	
4	Sh. S.K. Munjal	15	Mrs. Deepika Arora	
5	Sh. D.A. Mishra	16	Ms. Seema Bhatnagar	
6	Sh. Rakesh Dhawan	17	Mrs. Sushma Sachdeva	
7	Dr. (Mrs.) Sunita Ramrakhiani	18	Dr. Azhar Aslam Khan	
8	Mrs. Preeti Kiran	19	Mr. Roop Narain Chauhan	
9	Ms. Neeru Sofat	20	Mr. Mukesh Kumar Kaushik	
10	Sh. Pawan Singh Meena	21	Ms. Abha Chaudhary	
11	Mrs. P. Nirupama Shankar	22	Ms. Garima Bhutani	