SECOND YEAR HIGHER SECONDARY EXAMINATION MARCH 2018

SUBJECT: CHEMISTRY - II CODE. NO: 9016

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
1.		12	1	1
2.		Zero order	1	1
3.		Tetrahedral | structure | figure	1	1
4.		Carbyl amine Test | isocyanide test	1	1
5.		(b) | B	1	1
6.		Bakelite | Phenol formaldehyde resin | Novalac	1	1
7.		Aspartame	1	1
		Answer any ten from questions 8 to 20 (each carries two scores)		
8	a	(i) Covalent | Network	1	2
		(ii) Molecular | Hydrogen bonded	1	
	b.	Metal excess | excess of Zn^{2+} | presence of electron in interstitial site | Liberation of oxygen | $ZnO \xrightarrow{\Delta} Zn^{2+} + \frac{1}{2}O_2 + 2\bar{e}$	1	
9.		$\pi V = nRT$	1	2
		$\pi_1 = \pi_2$	2	
		$\frac{15}{60} = \frac{w_2}{180}$	1	
		$w_2 = 45$ only		
10		Definition of minimum boiling azeotrope | Constant boiling mixture | eg: of +ve deviations | Graph of +ve deviation	2	2

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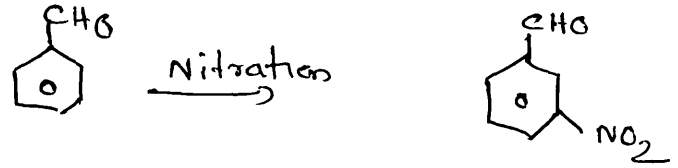
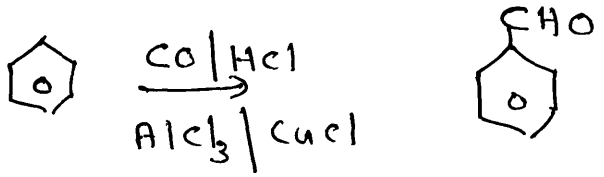
11	a.	$XeF_6 + 3H_2O \longrightarrow XeO_3 + 6HF$	2	
		or		
		Hydrolysis of XeF_6 / Reaction of XeF_6 with water	2	
	b.	$Xe + PtF_6 \longrightarrow XePtF_6$	2	2
		or		
		Fluorination of Xenon	2	
12.		In $[Ni(CO)_4]$ Ni having zero oxidation number with sp^3 Hybridisation	1	
		In $[Ni(CN)_4]^{2-}$ Ni having +2 oxidation number (Ni^{2+}) with dsp^2 hybridisation	1	
		OR		
		$[Ni(CO)_4]$ — sp^3 Hybridisation / Tetrahedral	1	
		$[Ni(CN)_4]^{2-}$ — dsp^2 hybridisation / Square planar	1	2
		or		
		Both are diamagnetic / all $\bar{e}$s are paired / absence of unpaired $\bar{e}$s / correct explanation	1 2	
13.	a.	CH_3CH_2NC / ethyl isocyanide / ethyl carbyl amine	2	2
	b.	Butane / $CH_3CH_2CH_2CH_3$ / wurtz reaction	2	
14.		Saytzeff's rule / Explanation	2	2

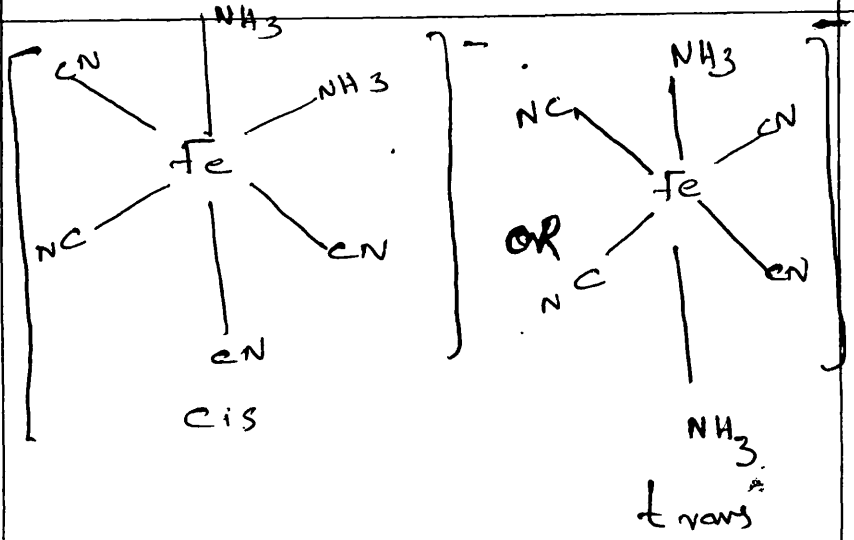
Qn No	Sub Qns	Answer Key/Value Points	Score	Total
15			2	2
		or Name / Structure of m-Nitro benzaldehyde	2	
16.			2	
		Explanation or	2	2
		or Preparation of Benzaldehyde	2	
17		$CH_3I \xrightarrow{NaCN/KCN} CH_3CN$	1	
		$CH_3CN \xrightarrow{\text{reduction}} CH_3CH_2NH_2$	1	2
		or Explanation / other correct Conversion	2	
18.		One difference between fibrous and globular protein or one example for each	2	2
19.		a. Polyacrylonitrile (iv) Acrilan	1	
		b. 1, 3- Butadiene - Acrylonitrile (iii) Buna-N	1	
		c. Ethylene glycol-Terephthalic acid (i) Terylene	1	2
		d. Cis-1,4-poly isoprene (ii) Natural Rubber	1	
20.	a.	Definition of Drug	2	2
	b.	Example	2	

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
		Answer any Seven from questions 21-29 (each carries 3 score)		
21		$d = \frac{Z M}{N_0 a^3}$	1	
		$Z = 4$	1	
		correct Substitution $M = \frac{2.8 \times (4 \times 10^{-8})^3 \times 6.022 \times 10^{23}}{4}$	3	3
		$M = 26.97$	1	
22.		Anode $Pb + SO_4^{2-} \longrightarrow PbSO_4 + 2\bar{e}$	2	
		Cathode $PbO_2 + SO_4^{2-} + 4H^+ + 2\bar{e} \longrightarrow PbSO_4 + 2H_2O$	2	3
		Overall $Pb + PbO_2 + 2H_2SO_4 \longrightarrow 2PbSO_4 + 2H_2O$	2	
		Electrolyte - H_2SO_4 / sulphuric acid	2	
23.		$K = \frac{2.303}{t} \log \frac{[A_0]}{[A]}$	2	
		$k_1 = \frac{2.303}{30} \log \left[\frac{0.60}{0.30} \right.$	2.	3
		$k_2 = \frac{2.303}{60} \log \frac{0.60}{0.15}$	2	
		$k_1 = k_2$	1	
		Definition of pseudo first order reaction / eqn. of hydrolysis of methyl acetate	2	

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
24.	a.	Statement of Hardy-Schulze rule / $PO_4^{3-} > SO_4^{2-} > Cl^-$ / $Al^{3+} > Ba^{2+} > Na^+$ / any suitable example	2	
	b.	Lyophilic colloids are more stable than lyophobic / It forms a protective layer around lyophobic Colloid / lyophilic colloids are more solvated	3 1	3
25.		$MgO_{(s)} + C_{(s)} \longrightarrow Mg_{(s)} + CO_{(g)}$		
		at 2273 k $\quad \Delta G = -628 - (-341)$ $= -314\ kJ\ mol^{-1}$	3	
			3	3
		or at 2273 k		
		or Reducing agent selected based on Ellingham diagram / ΔG -ve for spontaneous reaction / $MgO + C \longrightarrow Mg + CO$	2	
26	a.	PH_3	1	
	b.	$P_4 + 3NaOH + 3H_2O \longrightarrow PH_3 + 2NaH_2PO_2$	2	3
		or Any method of preparation of PH_3		

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
27	a.	Due to inert pair effect	1	
	b.	Decrease in Bond dissociation enthalpy down the group | decrease in stability from top to bottom | relabel Correct answer	1	3
	c.	H_3PO_4 does not contain any P-H bond | H_3PO_2 having P-H bonds | Structure of H_3PO_4 | Stru. of H_3PO_2 | Correct explanation	1	
28	a.	Variable oxidation state | incomplete d-orbital | large surface area | relabel correct answer.	1	
	b.	Incompletly filled d orbitals | electronic configuration of Scandium	1	3
	c.	$4\ FeCr_2O_4 + 8\ Na_2CO_3 + 7O_2 \rightarrow 8\ Na_2CrO_4 + 2Fe_2O_3 + 8CO_2$	1	
		or Explanation		

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
29	a.	Inductive effect | Steric effect | electronic effect	1	
	b.	Presence of H_2 bond in alcohol | absence of hydrogen bond in aldehyde	1	3
	c.	formation of bisulphite addition product | related explanation | equation	1	
		Answer any 3 from question 30 to 33 (Each carries 4 score)		
	30 a.	Definition or eg: of Primary cell	2	
	b.	Overall reaction does not involve any ions.	2	
	c.	Anode $2H_2 + 4OH^- \longrightarrow 4H_2O + 4e^-$	2	4
		Cathode $O_2 + 2H_2O + 4e^- \longrightarrow 4OH^-$	2	
		Overall Reaction $2H_2 + O_2 \longrightarrow 2H_2O$	2	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
31.	a.		2	4
	b.	$[Co(NH_3)_5CO_3]Cl$	2	
	c.	One limitation Two limitation	1 2	
32.	a (i)	A — CH_3CH_2OH | ethanol | ethyl alcohol	2	4
	(ii)	B — CH_3CHO | ethanal | acetaldehyde		
	b.	Aspirin | acetyl Salicylic acid | acetoxy benzoic acid | Structure	2	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total
33	a.	Correct Explanation of Lucas list	4	4
	b.	Lucas Reagent | $ZnCl_2$ + Con. HCl	2	

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Question No: 13 (b) – incorrect question

Reagent - required Na (Sodium)

given as N (nitrogen)

∴ Mark of the above question is carried over to 13 (a) question.