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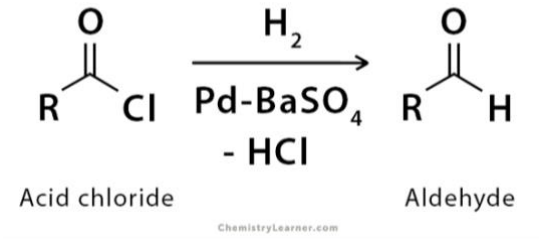
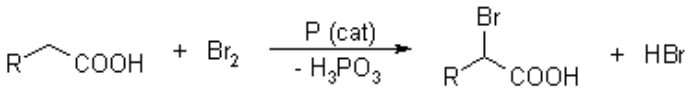
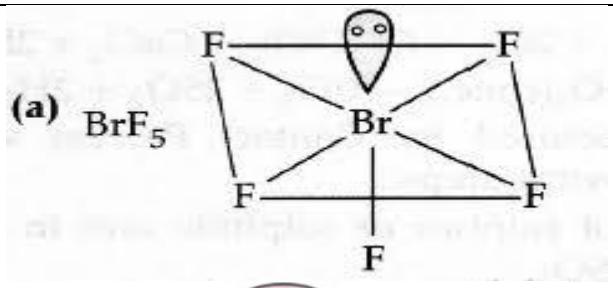
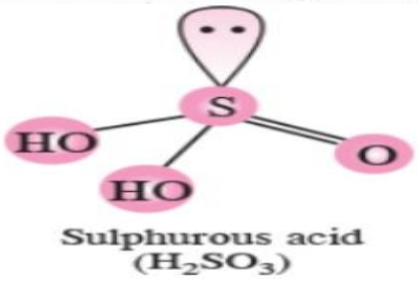
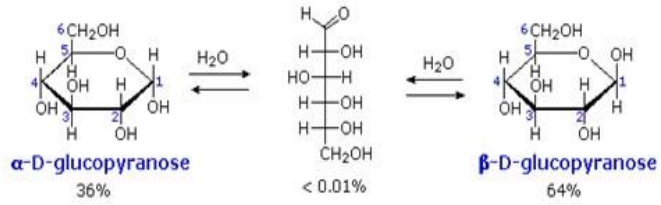
I PRE BOARD EXAMINATION 2020-21
CLASS XII
Subject: CHEMISTRY (043)
MARKING SCHEME SET C

Q NO	ANSWER	MARKS
1	(i) b (ii) b	2+2
2	1.b 2.b 3.d 4.b	1X4=4
3	a	1
4	C or c	1
5	d or c	1
6	a	1
7	b	1
8	c	1
9	c	1
10	c	1
11	d	1
12	b	1
13	c	1
14	b	1
15	a	1
16	a	1
17	Statement of Henry,s law,H_2 as KH is inversely proportional to solubility. **Or** a)Reverse osmosis, b) – ve deviation	1+1/2+1/2 Or1+1
18	a)increases 9 times b)8 times OR k = 0.693/t1/2 k = 0.693/5730 years-1 t = 2.303/k log Ao /A let Ao = 1, A = 3/10 ,so Ao/At = 1/ (3/10) = 10/3 t = 2.303 x 5730/0.693 log 10 / 3 t = 19042 x (1-0.4771) = 9957 years	1+1 OR ½ ½ ½ ½
19	$O_2[PtF_6]$, O_2 and Xe has comparable I.E **OR** a)$I_2<F_2<Br_2<Cl_2$ b)HF<HCL<HBr<HI	1+1 or 1+1

20	a)That means E^0 value increasing due to increase in first two I.E b)less hydration energy of Cu^{2+} does not compensate its I.E1+I.E2	1+1
21	a.T2g3 eg1 b. tetraminedichloridochromium (III) chloride **OR** a.unpaired electron is present in d orbital of$[NiCl_4]^{2-}$ b)sp^3d^2 , Octahedral	1+1 1+1/2+1/2
22	a) Rosenmund  b)HVZ Reaction  	1+1
23	a)ethanol+iodo methane b) ortho bromo phenol,para bromo phenol	½ each
24	Lucas test b) neu.$FeCl_3$ or $NaHCO_3$ test	1+1
25	a)Paramagnetic b)$K_3[Co(ONO)_6]$	1+1
26	**(i)** For cubic close-packed structure: $a = 2\sqrt{2}r$ $= 2\sqrt{2} \times 125$ pm = 353.55 pm = 354 pm (approximately) **(ii)** Volume of one unit cell = $(354\text{ pm})^3$ $= 4.4 \times 10^7\text{ pm}^3$ $= 4.4 \times 10^7 \times 10^{-30}\text{ cm}^3$ $= 4.4 \times 10^{-23}\text{ cm}^3$ Therefore, number of unit cells in 1.00 $cm^3 = \frac{1.00\text{ cm}^3}{4.4 \times 10^{-23}\text{ cm}^3}$ $= 2.27 \times 10^{22}$	1 1 1
27	**(a)Rate = $-\Delta[C_{12}H_{22}O_{11}]/\Delta t$** **(b) Rate = k' $[C_{12}H_{22}O_{11}]$ $[H_2O]$** **Here change in conc of water is very verysmall , hence it can be considerd constant** **K= k' $[H_2O]$** **Hence Rate = k$[C_{12}H_{22}O_{11}]$** **c) 1st order and unit s^{-1}**	1+1+1/2+1/2

28	a)due to high electronegativity of O and F b) Cr^{3+} has stable half filled t2g and Mn^{2+} has stable half filled d^5 c)d orbital is empty OR a)Cr^{2+} as t2g half filled is more stable in aqueous solution b) ns^2 (n-1)d^{0-1}(n-2)f^{1-14} c) due to lanthnoid contraction	1 each
29	a) i] by aldol ii)by Stephen reaction or DIBAL-H b)$CH_3COCH=C(CH_3)_2$	1+1+1
30	a) Hoffmann bromamide reduction+reaction b) Carbylamines reaction+ '' c) Sandmeyer reaction +''	1/2+1/2)each
31	a) Electrolyte 'B' is strong as on dilution the number of ions remains the same, only interionic attraction decreases therefore increase in Λ_m is small.	1 +1
	B) For hydrogen electrode, $H^+ + e^- \longrightarrow \frac{1}{2} H_2$, it is given that pH = 10 $\therefore [H^+] = 10^{-10}$ M Now, using Nernst equation: $H_{\left(H^+/\frac{1}{2}H_2\right)} = E^{\ominus}_{\left(H^+/\frac{1}{2}H_2\right)} - \frac{RT}{nF}\ln\frac{1}{[H^+]}$ $= E^{\ominus}_{\left(H^+/\frac{1}{2}H_2\right)} - \frac{0.0591}{1}\log\frac{1}{[H^+]}$ $= 0 - \frac{0.0591}{1}\log\frac{1}{[10^{-10}]}$ $= -0.0591 \log 10^{10}$ $= -0.591$ V	½ 1 1 1/2
or	a) 116+2*76.3=116+152.6=268.8 S cm^2 mol^{-1} b) OR Given $E^o_{Cell} = +0.30V$; $F = 96500C\ mol^{-1}$ $n = 6$ (from the given reaction) $\Delta_r G^o = -n \times F \times E^o_{Cell}$ $\Delta_r G^o = -6 \times 96500\ C\ mol^{-1} \times 0.30V$ $= -173,700\ J/mol$ or $-173.7\ kJ/mol$ $\log Kc = \frac{n E^o_{Cell}}{0.059}$ $\log Kc = \frac{6 \times 0.30}{0.059}$ $\log Kc = 30.5$	1+1/2/1/2(unit) 1 1 1
32	a) (i) Less bond dissociation energy of ICl (ii) Hydrogen bonding in H_2O b) (i)	1+1 1+1+1

	  Sulphurous acid (H_2SO_3) b. (ii) dehydrating agent OR a(i). $Cu+2H_2SO_4 \rightarrow CuSO_4 +SO_2 +2H_2O$ (ii) $XeF_4+12H_2O \rightarrow 4Xe+2XeO_3 +24HF+3O_2$ b.(i) due to more entropy decomposition favors (ii) F shows only one oxidation state (iii)Low solubility	
33 A] B]	a. (i) zwitter ion are dipolar ion which contain both positive and negative charge (ii) peptide bond form between two amino acids in protein b. (i) it form n-hexane (ii) form gluconic acid (iii) form saccharic acid OR a. DNA has deoxyribose sugar,RNA has ribose (orANY) DNA for hereditary RNA for protein synthesis c. (i) it does not give 2-4DNP test / schiff's test or any reaction given in ncert book  Mutarotation Equilibrium (ii)	1+1 1+1+1 OR 1+1+2(1 each)