

INDIAN SCHOOL MUSCAT

FIRST PRE-BOARD EXAMINATION
JANUARY 2020

SET A

CLASS XII

Marking Scheme – CHEMISTRY [THEORY]

Q.NO.	Answers	Marks (with split up)
1.	Structure	1
2.	$3\text{Cl}_2 + 6\text{NaOH} \rightarrow \text{NaClO}_3 + 5\text{NaCl} + 3\text{H}_2\text{O}$	1
3.	Low bond dissociation enthalpy of F-F and high hydration enthalpy of F^-	1
4.	HF, HCl ,HBr ,HI	1
5.	$\text{Cl}_2 + 3\text{F}_{2(\text{excess})} \rightarrow 2\text{ClF}_3$	1
6.	+ve	1
7.	Dichromate ion	1
8.	Chlorine/phenol	1
9.	2-Chloro-3-ethylpenta-1,4-diene	1
10.	PCC	1
11.	C	1
12.	B	1
13.	A	1
14.	D	1
15.	B	1
16.	A	1
17.	C	1
18.	B	1
19.	D	1
20.	C	1
21.	a) $\text{K}_2[\text{NiCl}_4]$ b) $t_{2g}^4e_g^0$	1 each
22.	a) $\text{CH}_3\text{COCl} + \text{anhy AlCl}_3$ b) $\text{Hg}^{2+}/\text{H}^+$	1 each
23.	Any two difference OR proper explanation	1+1
24.	a) Impurities are more soluble in the melt than in the solid state of the metal. b) Explanation	1 each
25.	a) Scattering of light by particles of colloid b) Temperature above which micelle formation takes place	1 each
26.	a) Nucleoside-base to the 1' position of sugar Nucleotide-nucleoside linked to phosphoric acid at 5' position of sugar b) Invert sugar-the product obtained by the hydrolysis of sucrose / leads to a change from dextro to laevo, OR i) As it is water soluble they get eliminated from the body ii) Presence of six carbon atoms in a straight chain.	1 each

27.	Difference with example	1 each
28.	a) Teraamminedichloridochromium(III)chloride b) Optical isomerism c) $[\text{NiCl}_4]^{2-}$ paramagnetic due to presence of two unpaired e whereas $[\text{Ni}(\text{CO})_4]$ diamagnetic as all e are paired	1 each
29.	a)  as iodine is a better leaving group b) Aq KOH followed by HNO_3 and AgNO_3 , white ppt with benzylchloride, soluble in NH_4OH c) definition OR i) equations	1 each
30.	$\text{Log } 0.07/0.02 = E_a/2.303 \times 8.314 [700-500]/[700 \times 500] = 18230.8 \text{ J}$	1+1+1
31.	a) One similarity and one difference b) $\text{MnO}_4^- + 8\text{H}^+ + 5\text{e}^- \rightarrow \text{Mn}^{2+} + 4\text{H}_2\text{O}$ OR i) Oxygen forms multiple bonds ii) a) $2\text{CrO}_4^{2-} + 2\text{H}^+ \rightarrow \text{Cr}_2\text{O}_7^{2-} + \text{H}_2\text{O}$ b) $2\text{KMnO}_4 \xrightarrow{\Delta} \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2$	1 each
32.	Equations	1 each
33.	a) Definition b) $K = 2.303/100 \log 0.4/2 \times 0.4 - 0.7 = 1.38 \times 10^{-2} \text{ s}^{-1}$	1 each
34.	a) NH_3 , heat b) Fehling's/Iodoform c) Stability of carboxylate ion	1 each
35.	a) Statement b) Diagram c) $\Delta T_f = iK_m$ $0.4 = 1 \times 5.12 \times 1 \times 1000 / M_B \times 50$ $M_B = 256 \text{ g/mol}$ OR i) Definition ii) $\Delta T_f = iK_m = 3 \times 1.86 \times 10.5 \times 1000 / 184 \times 200 = 1.59 \text{ K}$	1 1 3 1+1 3
36.	a) Lucas test b) butane, ethoxyethane, pentanal, pentanol c) equations OR i) reactions ii) mechanism	1 1 1 each 1+1 3
37.	a) H_2-O_2 cell b) $G^* = 1500 \times 0.146 \times 10^{-3} = 0.219 \text{ cm}^{-1}$ c) $E_{\text{cell}} = 2.71 - 0.059/2 \log[0.1]/[0.001] = 2.651 \text{ V}$ OR i) No ions involved in the reaction ii) $K = 138.9 \times 1.5 / 1000 = 2.08 \times 10^{-5} \text{ S cm}^{-1}$ iii) $\lambda_{\text{m(acetic acid)}}^\circ = 426 + 91 - 126 = 391 \text{ S cm}^2 \text{ mol}^{-1}$	1 2 2 1 2 2

