

MCQ answers – Chemistry 2023

	Ans		Ans		Ans		Ans		Ans
1	2	11	2	21	1	31	5	41	1
2	4	12	4	22	2	32	2	42	1
3	1	13	4	23	4	33	1	43	2
4	5	14	5	24	5	34	2	44	3
5	3	15	1	25	5	35	1	45	4
6	5	16	2	26	3	36	4	46	5
7	3	17	3	27	5	37	5	47	1
8	3	18	4	28	4	38	3	48	1
9	2	19	2	29	4	39	4	49	3
10	4	20	4	30	3	40	4	50	4

No.

ഉത്തരം കുറിക്കുക - 2023
രസായന വിദ്യാലയ II കിളിയാട്

A ഓരോന്നും - മൂല്യമുള്ള രസം

each

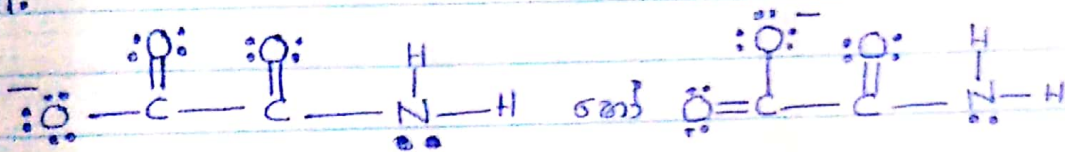
01. (a) i. Ne ii. Cl iii. C
 iv. Na v. F vi. S

(03 x 6)
(01) = 18

(b)

- i. X: C Y: N
- ii.

(02 + 02)

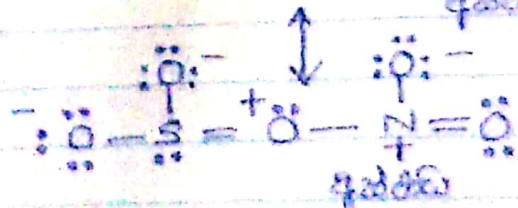
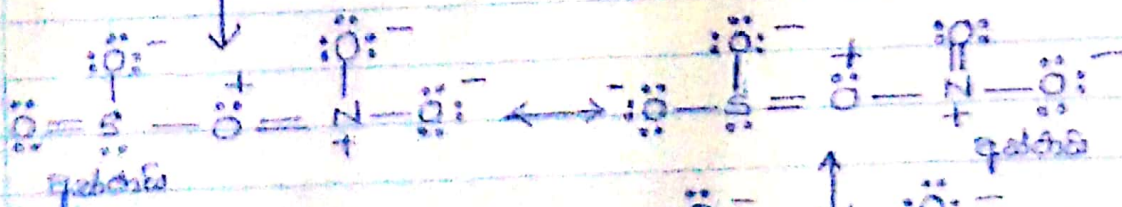
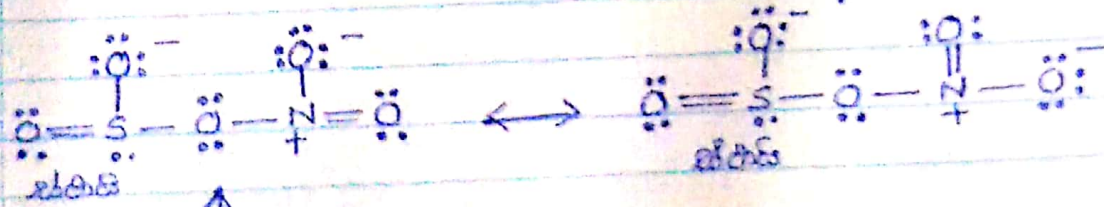
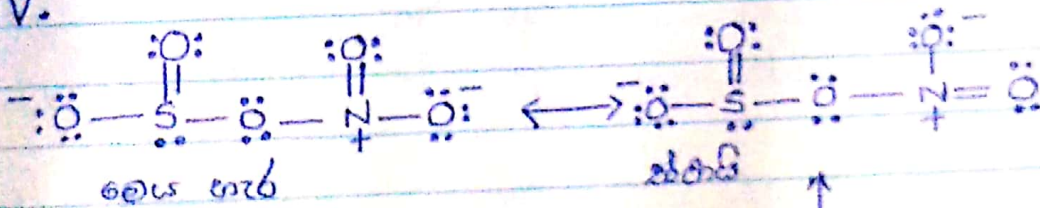


(05)

- iii. I X_2 : തന്മൂലം കൃത്യമാണ് Y: ഒരറ്റത്തുവരെ
 II X_2 : +3 Y: -3

(01 + 01)
(01 + 01)

iv.



മുഴുവൻ
(03 x 4)
രൂപം/രൂപം
(01 x 4)

മുഴുവൻ മുഴുവൻ 04

V.

		N^1	C^2	N^3	N^4
I	ඉරමාලිත වටා VSEPR ප්‍රභව සංඛ්‍යාව	4	3	3	2
II	ඉරමාලිත වටා ඉලෙක්ට්‍රෝන ප්‍රභව සංඛ්‍යාව	චතුස්කලීය	තලීය	තලීය	ඊර්ධ්ව
III	ඉරමාලිත වටා හැඩය	ඊර්ධ්වීය	තලීය	කෝණික	ඊර්ධ්ව
IV	ඉරමාලිතවේ මුහුණත	sp^3	sp^2	sp^2	sp

(01 x 16)

- VI-I H - N^1 : H - 1s N^1 - sp^3
- II N^1 - C^2 : N - sp^3 C^2 - sp^2
- III C^2 - O : C^2 - sp^2 O - 2p හෝ sp^2
- IV C^2 - N^3 : C^2 - sp^2 N^3 - sp^2
- V N^3 - N^4 : N^3 - sp^2 N^4 - sp
- VI N^4 - N^5 : N^4 - sp N^5 - sp^2 හෝ 2p

(01 x 12)

- vii I C^2 - O : C^2 - 2p O - 2p
- II N^3 - N^4 : N^3 - 2p N^4 - 2p
- III N^4 - N^5 : N^4 - 2p N^5 - 2p

(01 x 6)

- viii. N^1 : $107^\circ \pm 1$ C^2 : $120^\circ \pm 1$ N^3 : $118^\circ \pm 1$ N^4 : $180^\circ \pm 1$
- ix. $C^2 < N^1 < N^3 < N^4 < N^5$

(01 x 4)

(03)

(b) - 70

- (C) i. I $SOCl_2^- < SOF_2^- < SO_4^{2-} < SO_2 < SO_3$
- II $NO_4^{3-} < NO_2^- < NO_3^- < NO_2 < NO$

(03 x 2)

ii.

I. $\lambda = \frac{h}{mv}$

h - ජෛෂ්‍ය නියතය

(02)

ii

$\lambda = \frac{6.626 \times 10^{-34} \text{ J s}}{9.1 \times 10^{-28} \times 10^{-3} \text{ kg} \times 2.5 \times 10^7 \text{ m s}^{-1}}$

(02)

$= 2.912 \times 10^{-11} \text{ m} = 2.912 \times 10^{-2} \text{ nm}$

(02)

(2).

Atlas

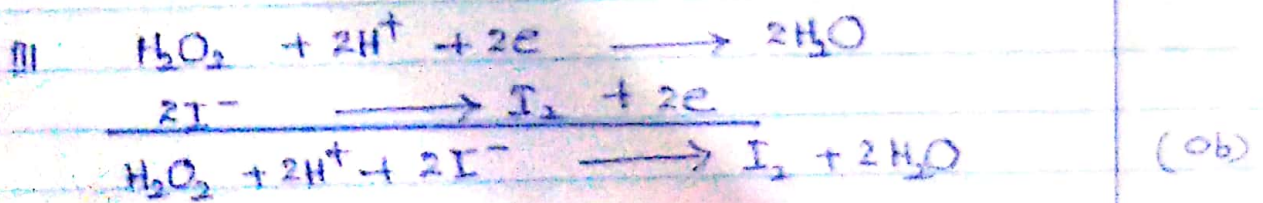
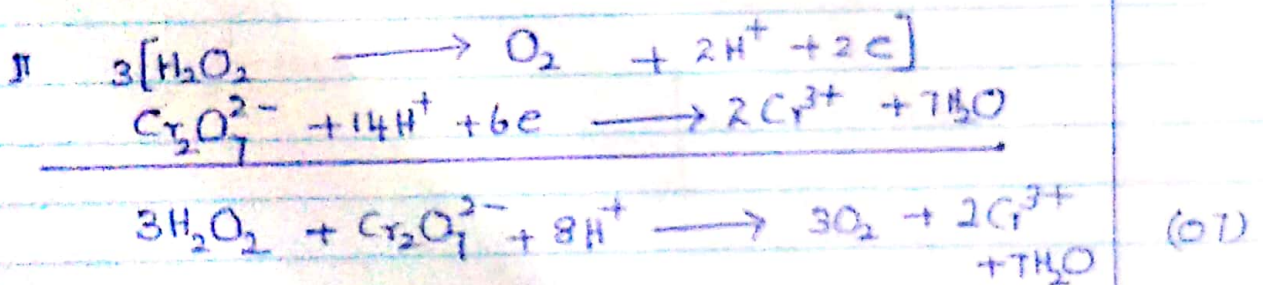
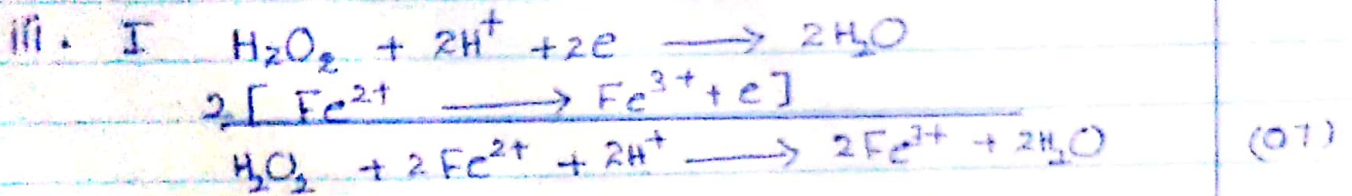
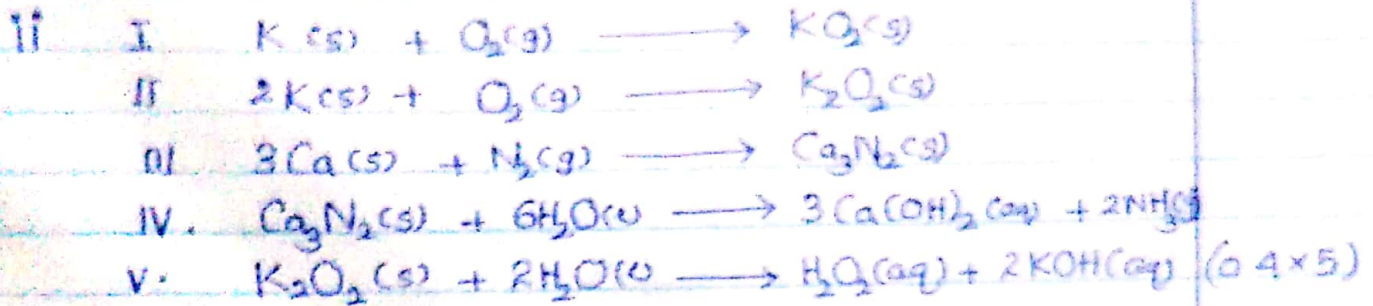
01 → 100

(C) → 12

02. (ii) i

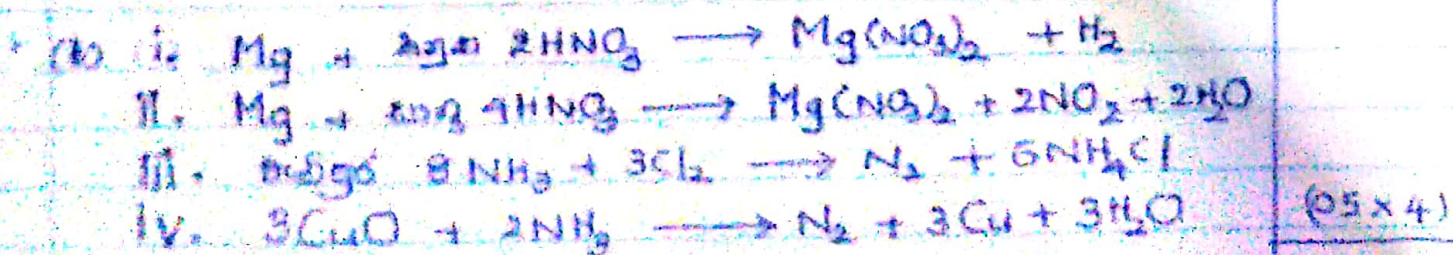
- | | | |
|---------------|------------|--------------|
| A - K | B - KO_2 | C - K_2O_2 |
| D - K_2O | E - Ca | F - CaO |
| G - Ca_3N_2 | H - NH_3 | I - H_2O_2 |
| J - KOH | | |

(04 x 10)



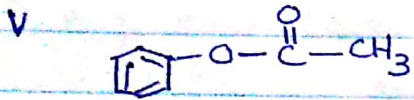
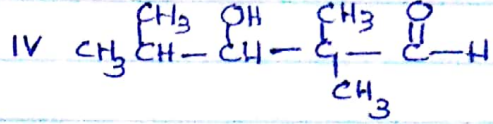
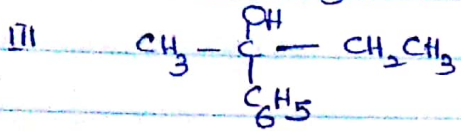
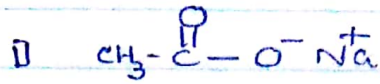
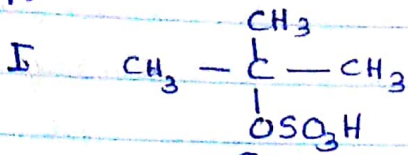
* අර්ධ සම්බන්ධතා පවත්වාන ලිය ඇතිව
 එහි අර්ධ සම්බන්ධතාව ලෙස (02)
 ලෙස හඳුනා ගන්න.

(a) → 80



(b) → 80

(b) i.

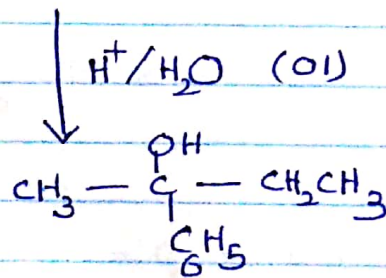
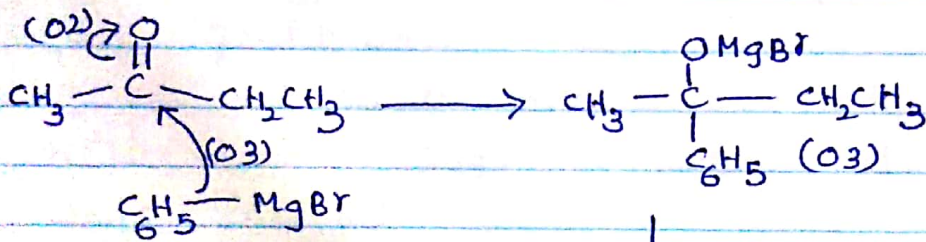


(05x5)

ii. ප්‍රතික්‍රියාව I : ඉලෙක්ට්‍රෝනලීන ආකලන
 ප්‍රතික්‍රියාව II : නියුක්ලියෝෆිලික ආදේශන
 ප්‍රතික්‍රියාව III : නියුක්ලියෝෆිලික ආකලන

(4x3)

iii



(9)

b → 46

03. (a) i.

- I RA: $\text{H}_2\text{O}(s)$ II AB: $\text{H}_2\text{O}(s) \rightleftharpoons \text{H}_2\text{O}(l)$
 III BC: $\text{H}_2\text{O}(l)$ IV CD: $\text{H}_2\text{O}(l) \rightleftharpoons \text{H}_2\text{O}(g)$
 V DE: $\text{H}_2\text{O}(g)$

(02x5)

- ii. A : සාය (අයිස්) දියවීමට පටන් ගැනීම
 B : සියලුම සාය (අයිස්) දියවී ඇති අවස්ථාව
 C : දුමය (දුම ජලය) නැවීමට පටන් ගැනීම
 D : සියලුම දුම (ජලය) වාෂ්ප වී ඇති අවස්ථාව

(02x4)

iii. ප්‍රස්ථාරයේ භාග්‍ය වර්ග දැක්වෙන්නේ කලාප සංක්‍රමණ සිදුවන අවස්ථා වේ.

(02)

($\text{H}_2\text{O}(s) \rightleftharpoons \text{H}_2\text{O}(l)$ සඳහා ලැබී ඇති භාග්‍යව
 $\text{H}_2\text{O}(l) \rightleftharpoons \text{H}_2\text{O}(g)$ වෙනස්ඳහා ලැබී ඇති
 භාග්‍යව දීර්ඝ වේ.)

හේතුව $\Delta H_{fus} < \Delta H_{vap}$ වීමය.

(02)

iv. -40°C පවතින අයිස් 0°C

ඇති අයිස් බවට පත්වීමට අවශ්‍ය ආර්ථය } $q_1 = ms \Delta t$ (02)

$q_1 = 90.0 \text{ g} \times 2.09 \text{ J g}^{-1} \text{ }^\circ\text{C}^{-1} \times 40^\circ\text{C}$ (02)

$= 7.524 \times 10^3 \text{ J} = 7.524 \text{ kJ}$ (02)

0°C අයිස් 0°C ඇති දුම ජලයට බවට පත්වීමට අවශ්‍ය ආර්ථය

} $q_2 = n \times \Delta H_{fus}$ (02)

$q_2 = \frac{90.0 \text{ g}}{18 \text{ g mol}^{-1}} \times 6.0 \text{ kJ mol}^{-1}$ (02)

$= 30.0 \text{ kJ}$ (02)

0°C ඇති දුම ජලය 60°C ජලය බවට පත්වීමට අවශ්‍ය ආර්ථය

} $q_3 = ms \Delta t$ (02)

$q_3 = 90.0 \text{ g} \times 4.2 \text{ J g}^{-1} \text{ }^\circ\text{C}^{-1} \times 60^\circ\text{C}$ (02)

$= 22680 \text{ J} = 22.68 \text{ kJ}$ (02)

$$\begin{aligned}
 \text{අවසාන මුළු තාප ප්‍රමාණය} &= q_1 + q_2 + q_3 && (02) \\
 &= 7.524 \text{ kJ} + 30.0 \text{ kJ} + 22.68 && (02) \\
 &= 60.204 = 60.20 \text{ kJ} && (02)
 \end{aligned}$$

a → 46

(b) i $P_A = P_A^0 X_A$ $P_B = P_B^0 X_B$ P_A හා P_B යනු වාෂ්ප පීඩනයන් වන අතර A හා B හි ආංශික ජීවන වේ.

$$P_{\text{Tot}} = P_A + P_B = P_A^0 X_A + P_B^0 X_B \quad (02)$$

$$P_A = Y_A P_{\text{Tot}} \quad (02)$$

$$Y_A = \frac{P_A}{P_{\text{Tot}}} \quad (02)$$

$$= \frac{P_A^0 X_A}{P_A^0 X_A + P_B^0 X_B} \quad (02)$$

(b) i → 12

ii. රවුල් නියමය
 බෝල්ටන් හේ ආංශික ජීවන නියමය

$$iii \quad X_A = \frac{n_A}{n_A + n_B} = \frac{1.0 \text{ mol}}{1.0 \text{ mol} + 4.0 \text{ mol}} \quad (02)$$

$$= \frac{1}{5} \quad (02)$$

$$X_B = \frac{n_B}{n_A + n_B} = \frac{4.0 \text{ mol}}{1.0 \text{ mol} + 4.0 \text{ mol}} \quad (02)$$

$$= \frac{4}{5} \quad (02)$$

$$Y_A = \frac{P_A^0 X_A}{P_A^0 X_A + P_B^0 X_B} = \frac{50 \text{ kPa} \times \frac{1}{5}}{50 \text{ kPa} \times \frac{1}{5} + 75 \text{ kPa} \times \frac{4}{5}} \quad (02)$$

$$= \frac{10}{10+60} = \frac{1}{7} \quad (02)$$

$$Y_B = 1 - Y_A \quad (Y_A + Y_B = 1) \quad (02)$$

$$= 1 - \frac{1}{7} \quad (02)$$

$$= \frac{6}{7} \quad (02)$$

(b) ii → 18

(IV) I S₁ : සහ S₂ : 3ව S₃ : වායු (02x3)

II සහ , 3ව සහ වායු යන කලාප ඉතම එකවර
සමතුලිතව පවතින ලෙස වේ. (03)

එය නිසි ලෙස ලෙස හඳුන්වයි (02)

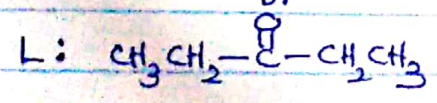
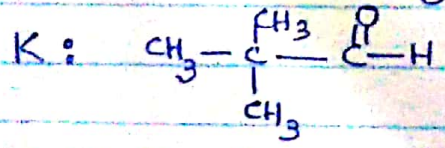
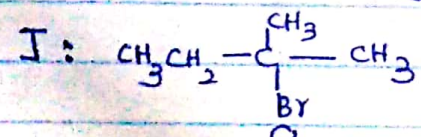
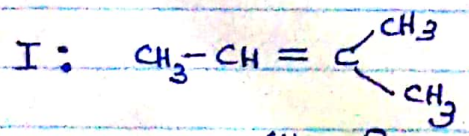
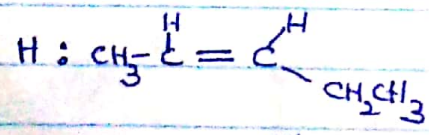
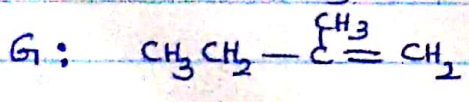
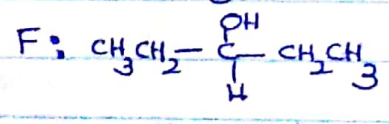
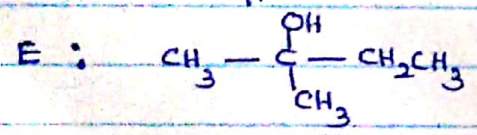
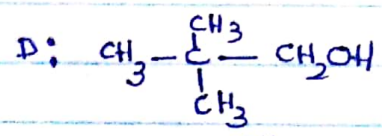
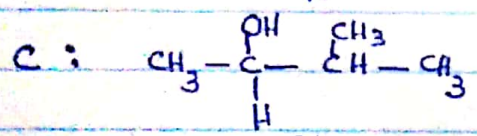
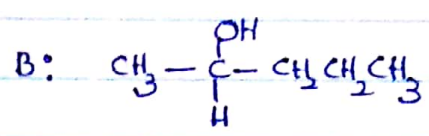
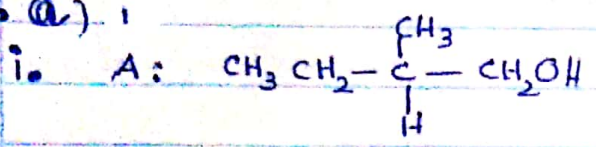
III ද්විධ ලිපි/ලිපිවල - ජීවගාමය යොදාගැනීමේ වායුමය
3ව කලි හැකි ලිපි ලිපිවල (03)

(V) IV සහය → වායු බවට පත්වේ. (සහය ප්‍රචලනය
නග වේ) (03)

(VI) V සහය → 3ව බවට පත්වේ. (03)

b) → iv → 20

Q.4. (a) i



(04 x 12)

(ii) NH₂/AgNO₃ යෙදුණි ; K හෝ ඊළි කලාපයක්
ලැබේ.

ඊළි/ලය (04)

L හෝ එසේ නොලැබේ

ඊළි/ල (01 + 01)

හෝ හේලි 3ව/ලය යෙදුණි

K හෝ ගමාලේ රතු ද්‍රව්‍යයක්

L හෝ එසේ නොලැබේ.

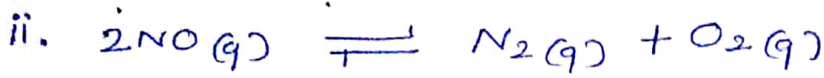
a → 54

5

a) i.

$$K_p = \frac{(P_{N_2(g)}) (P_{O_2(g)})}{(P_{NO(g)})^2}$$

5



	4n	n	} 3 ආරම්භක මවුල සමතුලිත මවුල
2x	4n-x	n-x	

සමතුලිතව පවතින වායු මවුල මුළු එකතුව = 5n
 සමතුලිතව පවතින NO(g) මවුල (2x) = $5n \times \frac{2}{100} = 0.1n$ (2)

x = 0.05n (2)
 සමතුලිතව පවතින N₂(g) මවුල = 4n - 0.05n = 3.95n (2)

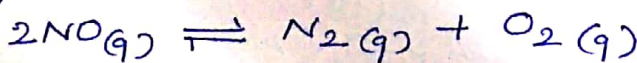
සමතුලිතව පවතින O₂(g) මවුල = n - 0.05n = 0.95n (2)
 මුළු පීඩනය = p

$$K_p = \frac{\left(\frac{3.95n}{5n} \times p\right) \left(\frac{0.95n}{5n} \times p\right)}{\left(\frac{0.1n}{5n} \times p\right)^2}$$

4+1

$$= 3.75 \times 10^2 // \quad (4)$$

වෙනත් විදිහ



	4P	P	} 3 ආරම්භක පීඩන සමතුලිත පීඩන
2P ₁	4P - P ₁	P - P ₁	

$$P_{NO} = \frac{2}{100} \times 5P$$

$$2P_1 = \frac{2}{100} \times 5P$$

$$P_1 = 0.05P \quad (2)$$

$$P_{N_2} = 4P - 0.05P = 3.95P \quad (2)$$

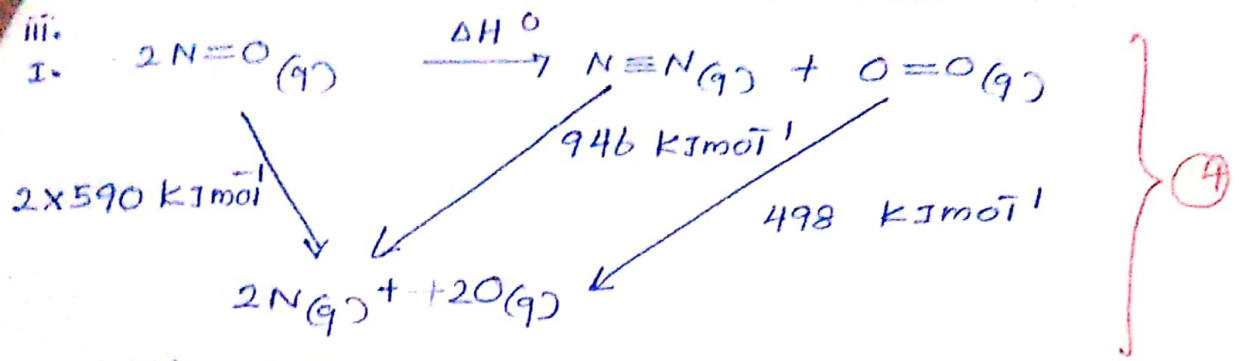
$$P_{O_2} = P - 0.05P = 0.95P \quad (2)$$

$$P_{NO} = 0.05P \times 2 = 0.1P \quad (2)$$

$$K_p = \frac{3.95P \times 0.95P}{(0.1P)^2} = 3.75 \times 10^2 //$$

4+1

4



හෙස් නියමයට අනුව

$$\Delta H^\circ = (2 \times 590) - (946 + 498) \text{ kJmol}^{-1}$$

$$= -264 \text{ kJmol}^{-1} \quad (2+1)$$

විකල්ප ජලිතුව

$$\Delta H^\circ = \sum \text{නැවතුනු බන්ධන ශක්තිය} - \sum \text{පැවතුනු බන්ධන ශක්තිය}$$

$$= (590 \times 2) - (946 + 498) \text{ kJmol}^{-1}$$

$$= -264 \text{ kJmol}^{-1} \quad (2+1)$$

II. • T_1 හිදී O_2 මවුල ප්‍රතිශතය $= \frac{0.95n}{5n} \times 100 = 19\%$ (3)

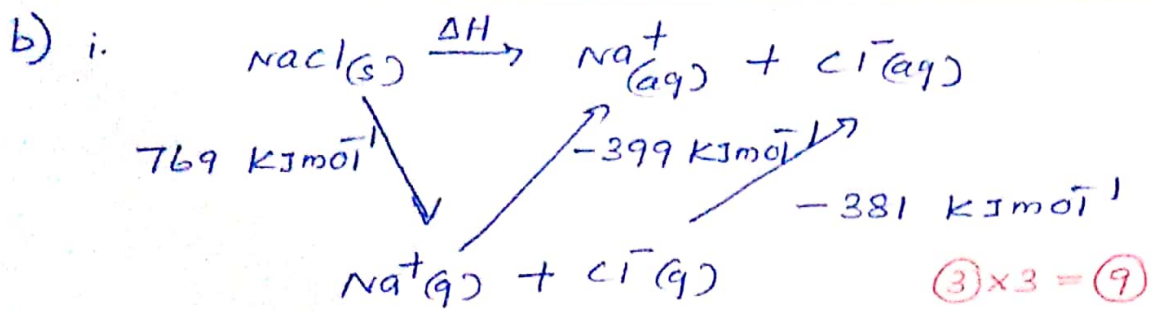
• T_2 හිදී O_2 මවුල ප්‍රතිශතය $= 10\%$.

• T_1 සහ T_2 දුක්ඛා ද්‍රව්‍යයන් තෙක් විවේචිත අවස්ථාවක මවුල ඵලය වේ. (3)

• ΔH මුද්‍රිත ප්‍රතික්‍රියාවේ ΔH හි ලකුණ (-) වේ. (3)

∴ $T_1 < T_2$ වේ. (3)

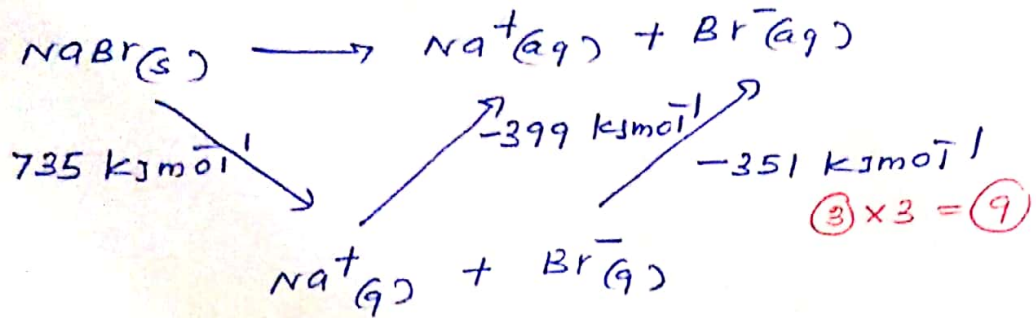
III. T_1 ද්‍රව්‍යයන් වඩා අඩු ඝනකමක් T_2 ද්‍රව්‍යයන්ගේදී ප්‍රතික්‍රියාව අවස්ථාවක වේ. (3)



හෙළි නියමයට අනුව

$$\Delta H = 769 + (-399 - 381) \text{ kJmol}^{-1} \quad (3+1)$$

$$= -11 \text{ kJmol}^{-1} \quad (3+1)$$



හෙළි නියමයට අනුව

$$\Delta H = 735 + (-399 - 351) \text{ kJmol}^{-1} \quad (3+1)$$

$$= -15 \text{ kJmol}^{-1} \quad (3+1)$$

ii

NaCl සඳහා

$$\Delta G = \Delta H - T\Delta S \quad (5)$$

$$= -11 \text{ kJmol}^{-1} - \left(\frac{+13}{1000} \text{ kJmol}^{-1} \right) \quad (3+1)$$

$$= -11.013 \text{ kJmol}^{-1} // \quad (3+1)$$

NaBr සඳහා

$$\Delta G = -15 \text{ kJmol}^{-1} - \left(\frac{15}{1000} \text{ kJmol}^{-1} \right) \quad (3+1)$$

$$= -15.018 \text{ kJmol}^{-1} // \quad (3+1)$$

iii ΔG හි සෘජු අගය NaCl මගේ ඔහු NaBr මගේ ඔහුට වඩා NaBr මගේ ඉහළින් ඉහළ වේ. (5)

5b-60

$$c) i. n_{\text{HCl}} = \frac{0.05 \times 20}{1000} \quad \text{--- (3+1)}$$

$$n_{\text{HCl}} = n_{\text{OH}^-} \quad \text{--- (2)}$$

$$\text{or } [\text{OH}^-] = \frac{0.05 \times 20 \times 10^{-3} \text{ mol}}{25 \times 10^{-3} \text{ dm}^3} \quad \text{--- (3+1)}$$

$$= 0.04 \text{ mol dm}^{-3} // \quad \text{--- (3+1)}$$

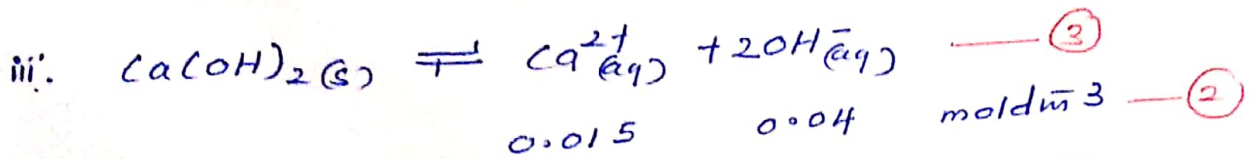
ii.

$$\text{NaOH} \text{ මගින් ලබන } [\text{OH}^-] = 0.01 \text{ mol dm}^{-3} \quad \text{--- (2+1)}$$

$$\text{Ca(OH)}_2 \text{ මගින් ලබන } [\text{OH}^-] = 0.04 - 0.01 = 0.03 \text{ mol dm}^{-3}$$

$$[\text{Ca}^{2+}]$$

$$= \frac{0.03}{2} = 0.015 \text{ mol dm}^{-3} \quad \text{--- (2+1)}$$



$$K_{sp} = [\text{Ca}^{2+}(aq)] [\text{OH}^{-}(aq)]^2 \quad \text{--- (5)}$$

$$= 0.015 \text{ mol dm}^{-3} \times (0.04 \text{ mol dm}^{-3})^2 \quad \text{--- (4+1)}$$

$$= 2.4 \times 10^{-5} \text{ mol}^3 \text{ dm}^{-9} \quad \text{--- (4+1)}$$

50 - 40

$$K_D = \frac{[\text{CH}_3\text{COOH}]_{\text{H}_2\text{O}}}{[\text{CH}_3\text{COOH}]_{\text{but}}}$$

$$= \frac{0.1 \text{ mol dm}^{-3}}{0.125 \text{ mol dm}^{-3}}$$

$$= 0.8 //$$

$$\text{and } \frac{[\text{CH}_3\text{COOH}]_{\text{but}}}{[\text{CH}_3\text{COOH}]_{\text{aq}}} \quad (4)$$

$$\frac{0.125 \text{ mol dm}^{-3}}{0.1 \text{ mol dm}^{-3}} \quad (2+1)$$

$$1.25 // \quad (2+1)$$

units wrong.

6a-40

$$6b) i) [\text{H}_2\text{O}_2] = \frac{n_{\text{H}_2\text{O}_2}}{V_{\text{H}_2\text{O}_2}} \quad (2)$$

$$n_{\text{H}_2\text{O}_2} = [\text{H}_2\text{O}_2] V_{\text{H}_2\text{O}_2} \quad (2)$$

$$n_{\text{H}_2\text{O}_2} = \frac{2}{5} n_{\text{MnO}_4^-} \quad (2)$$

$$\frac{2}{5} n_{\text{MnO}_4^-} = [\text{H}_2\text{O}_2] V_{\text{H}_2\text{O}_2} \quad (2)$$

$$n_{\text{MnO}_4^-} = C_{\text{MnO}_4^-} \times V_{\text{MnO}_4^-} \quad (2)$$

$$\frac{2}{5} C_{\text{MnO}_4^-} \times V_{\text{MnO}_4^-} = [\text{H}_2\text{O}_2] \underbrace{V_{\text{H}_2\text{O}_2}}_{\text{same}} \quad (2)$$

$$V_{\text{MnO}_4^-} \propto [\text{H}_2\text{O}_2]$$

and also

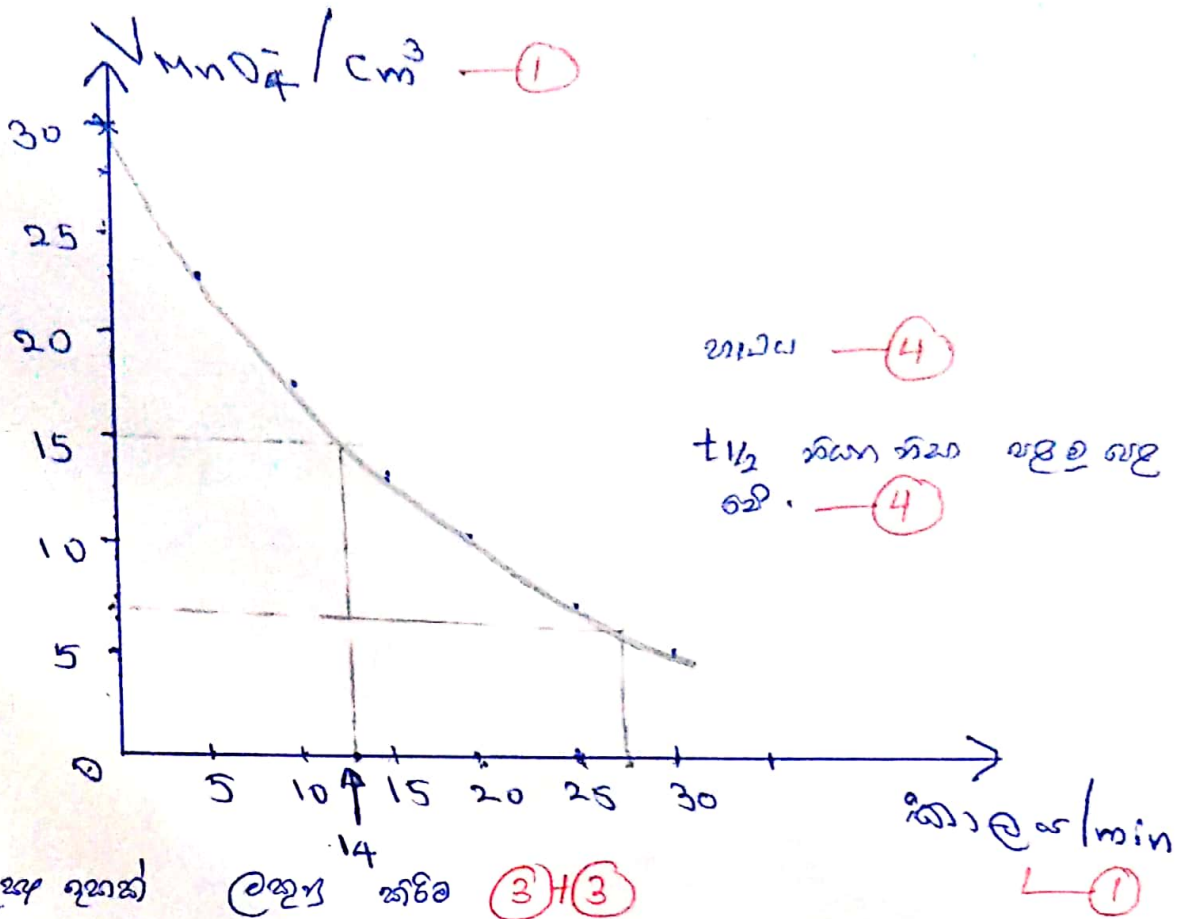
$$[\text{H}_2\text{O}_2] = \frac{n_{\text{H}_2\text{O}_2}}{10 \times 10^{-3}} \text{ mol dm}^{-3} \quad (3+1)$$

$$n_{\text{H}_2\text{O}_2} = 0.1 \times 10^{-3} \times V_{\text{MnO}_4^-} \times \frac{2}{5} \quad (4)$$

$$[\text{H}_2\text{O}_2] = \frac{0.1 \times 10^{-3} \times V_{\text{MnO}_4^-} \times \frac{2}{5}}{10 \times 10^{-3}} \quad (4)$$

$$[\text{H}_2\text{O}_2] \propto V_{\text{MnO}_4^-}$$

11) I



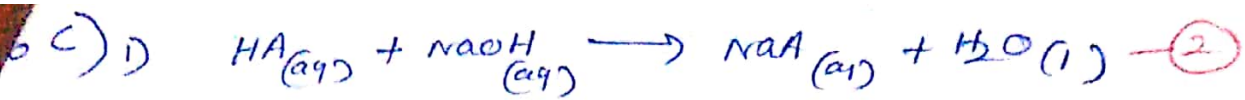
III. $t_{1/2} = \frac{0.693}{k}$ — (4)

$k = \frac{0.693}{14 \text{ s}}$ — (3+1)

$= 0.0495 \text{ s}^{-1}$ — (3+1)

* $t_{1/2}$ වීමේ කාලය 203.2 ක් $t_{1/2} = 12-15$ ක් කාලය ලෝහ ද්‍රව්‍ය.

66-40



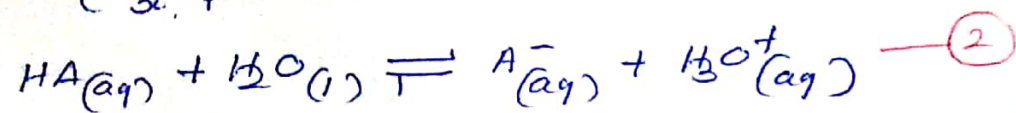
$$[HA] = \frac{0.5 \times 15.6 \times 10^{-3} \text{ mol dm}^{-3}}{10 \times 10^{-3}} = 0.78 \text{ mol dm}^{-3}$$

(2+1)

ii) $pH = -\log_{10} [H_3O^+(aq)]$ — (2)

$$2.5 = -\log_{10} [H_3O^+(aq)]$$

$$[H_3O^+(aq)] = 3.162 \times 10^{-3} \text{ mol dm}^{-3}$$
 — (2+1)



ଅନୁପାତ
ସମାପ.

$0.78 - x$	x	x	mol dm^{-3}	}
$0.78 - 3.162 \times 10^{-3}$	3.162×10^{-3}	3.162×10^{-3}	mol dm^{-3}	

(2+1)

$$K_a = \frac{[A^-(aq)] [H_3O^+(aq)]}{[HA(aq)]} = \frac{(3.162 \times 10^{-3} \text{ mol dm}^{-3})^2}{0.78 - 3.162 \times 10^{-3} \text{ mol dm}^{-3}}$$

(5) (2+1)

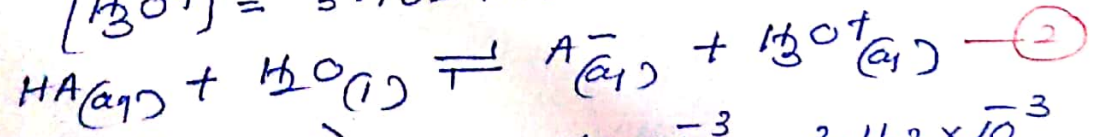
$0.78 \gg 3.162 \times 10^{-3}$ ଅନୁ — (1)

$$= \frac{(3.162 \times 10^{-3})^2}{0.78} = 1.28 \times 10^{-5} \text{ mol dm}^{-3}$$

(2+1)

ଅନୁପାତ ସମାପ
 $pH = -\log_{10} [H_3O^+(aq)] = 2.5$ — (2)

$$[H_3O^+] = 3.162 \times 10^{-3} \text{ mol dm}^{-3}$$
 — (2+1)



$(0.78 - 3.162 \times 10^{-3})$	3.162×10^{-3}	3.162×10^{-3}	mol dm^{-3}	}
---------------------------------	------------------------	------------------------	----------------------	---

(2+1)

$$K_a = \frac{[A^-(aq)] [H_3O^+(aq)]}{[HA(aq)]} = \frac{(3.162 \times 10^{-3} \text{ mol dm}^{-3})^2}{(0.78 - 3.162 \times 10^{-3}) \text{ mol dm}^{-3}}$$

(5) (2+1)

$0.78 \gg 3.162 \times 10^{-3}$ — (1)

$$= \frac{(3.162 \times 10^{-3})^2}{0.78} = 1.28 \times 10^{-5} \text{ mol dm}^{-3}$$

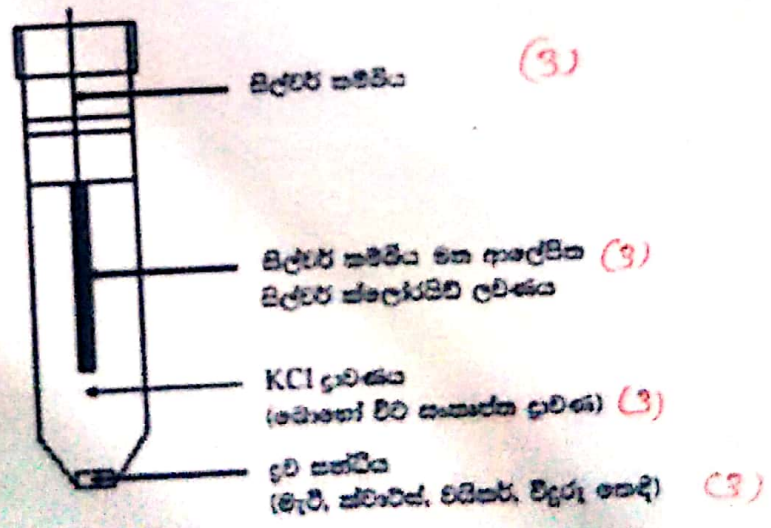
(2+1)

൧൭ (a)

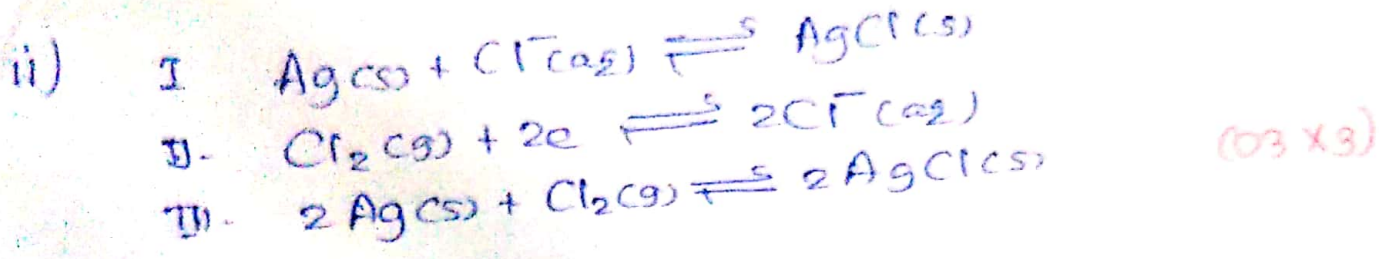
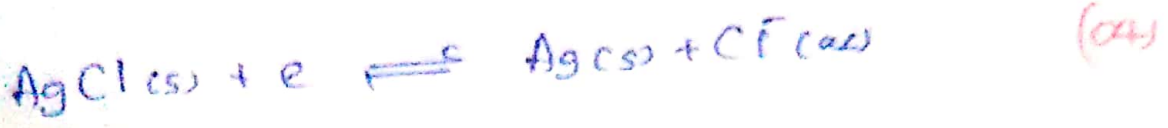
i. 1. Fe ന്റെ Fe^{2+} അയോണിനെ തിരിച്ചറിയാൻ ഉപയോഗിക്കുന്ന രാസപ്രതികരണങ്ങൾ എഴുതുക. Fe^{2+} അയോണിനെ തിരിച്ചറിയാൻ ഉപയോഗിക്കുന്ന രാസപ്രതികരണങ്ങൾ എഴുതുക. (05)

ii. 1. Fe^{2+} അയോണിനെ തിരിച്ചറിയാൻ ഉപയോഗിക്കുന്ന രാസപ്രതികരണങ്ങൾ എഴുതുക. (03)
 2. Fe^{3+} അയോണിനെ തിരിച്ചറിയാൻ ഉപയോഗിക്കുന്ന രാസപ്രതികരണങ്ങൾ എഴുതുക. (03)
 3. Fe^{2+} അയോണിനെ തിരിച്ചറിയാൻ ഉപയോഗിക്കുന്ന രാസപ്രതികരണങ്ങൾ എഴുതുക. (03)

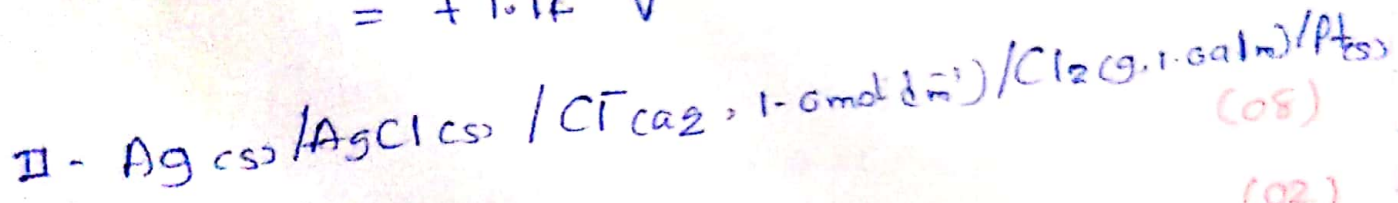
iii



iv AgCl ലായനിയെ തിരിച്ചറിയാൻ ഉപയോഗിക്കുന്ന രാസപ്രതികരണങ്ങൾ എഴുതുക. AgCl ലായനിയെ തിരിച്ചറിയാൻ ഉപയോഗിക്കുന്ന രാസപ്രതികരണങ്ങൾ എഴുതുക. (04)



iii) I $E^\ominus_{\text{cell}} = E^\ominus_{\text{cathode}} - E^\ominus_{\text{anode}} \quad (03)$
 $= +1.36\text{V} - 0.22\text{V} \quad (3+1)$
 $= +1.14\text{V} \quad (3+1)$



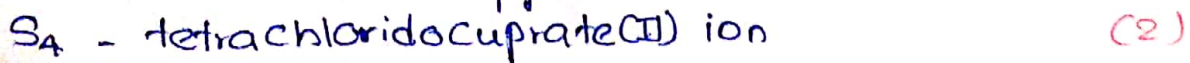
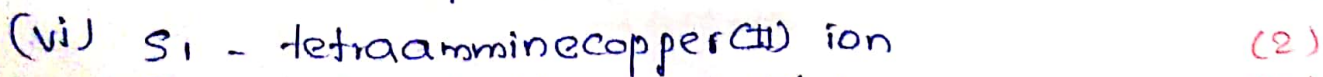
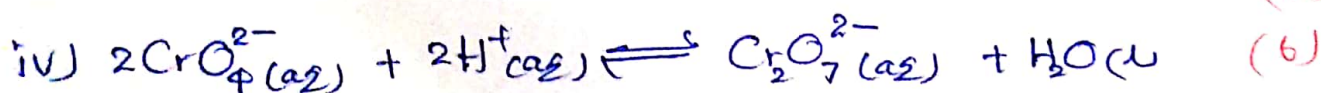
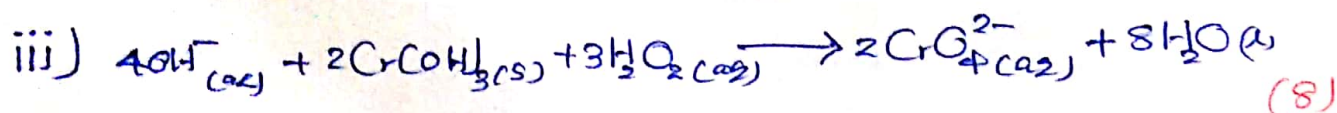
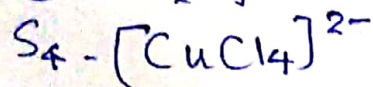
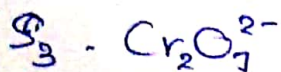
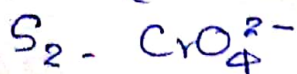
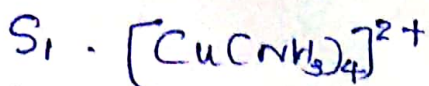
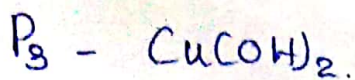
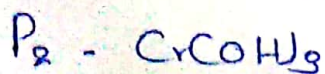
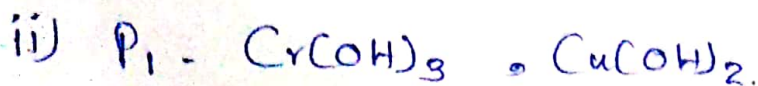
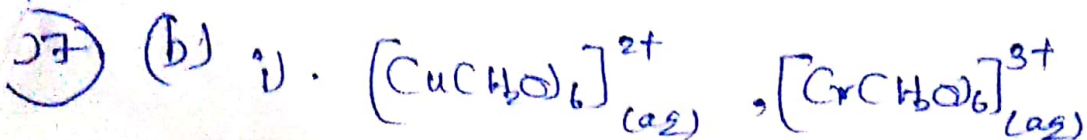
III. නැත
 $\text{KCl}(aq) (\text{Cl}^-(aq))$ හෝ KClO_3 හෝ KClO_4 වැනි
 සහති.

IV $Q = It \quad (3+1)$
 $= 0.15\text{A} \times (80 \times 60)\text{s}$

ප්‍රවාහයේ මුළු ඉලෙක්ට්‍රෝන ප්‍රමාණය = $\frac{0.15 \times 80 \times 60\text{C}}{96500\text{C mol}^{-1}}$

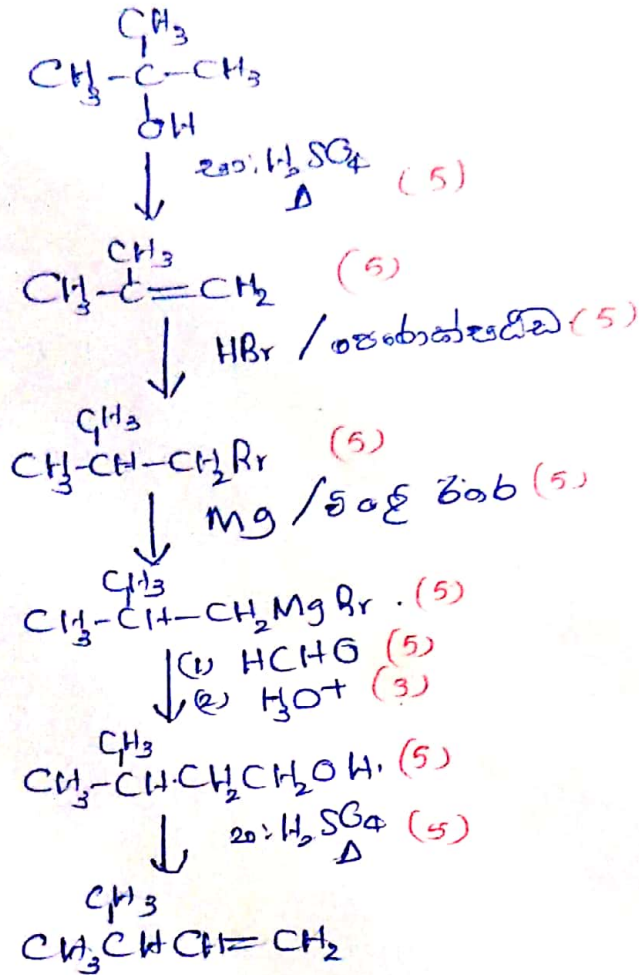
මූලික AgCl ප්‍රමාණය = $\left(\frac{0.15 \times 80 \times 60}{96500} \right) \text{mol} \quad (02)$

මූලික AgCl ස්වල්පය = $\left(\frac{0.15 \times 80 \times 60}{96500} \right) \text{mol} \times 143.5\text{g mol}^{-1} \quad (2+1)$
 $= 1.07\text{g} \quad (2+1)$

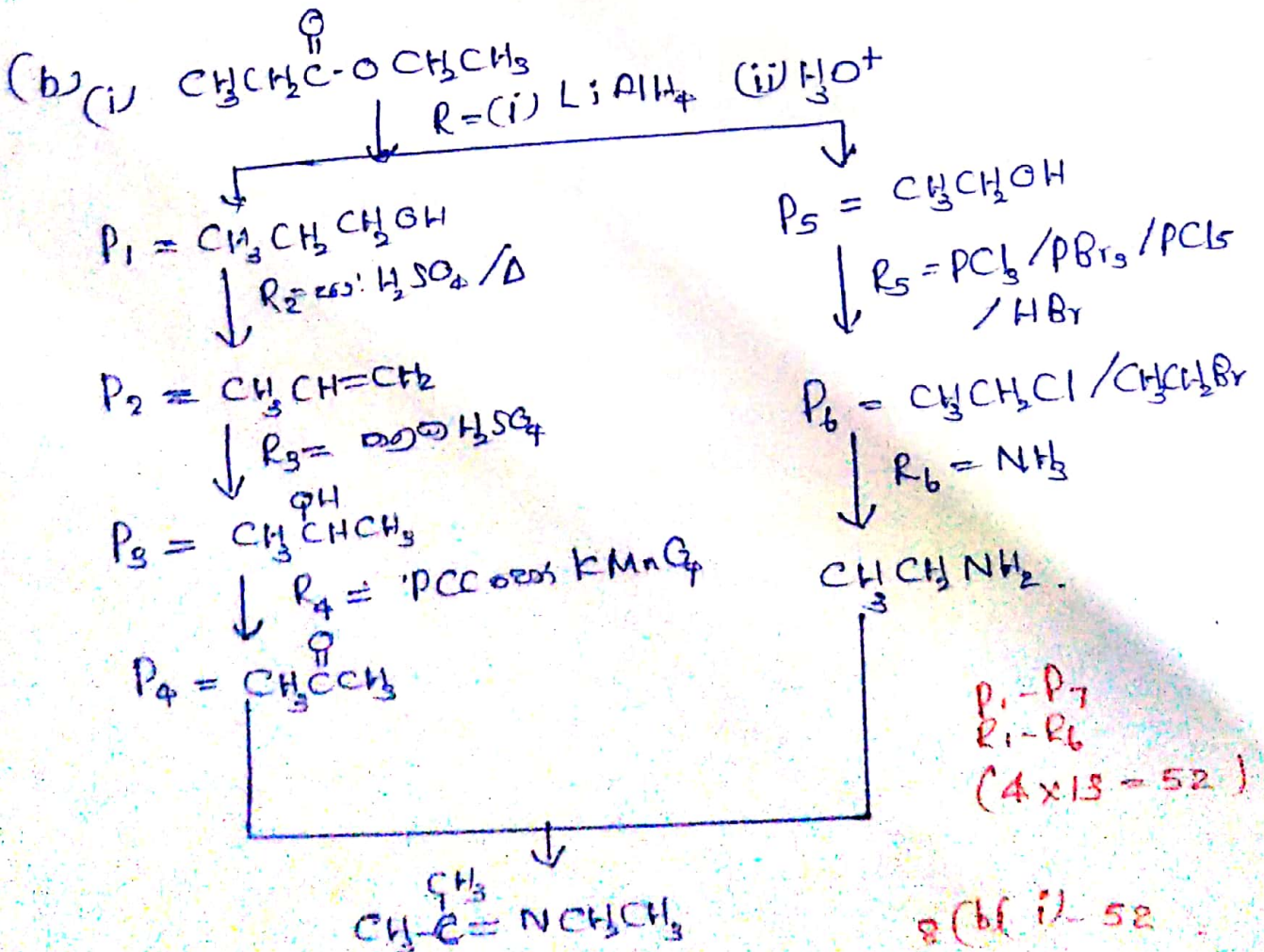


b-(T5)

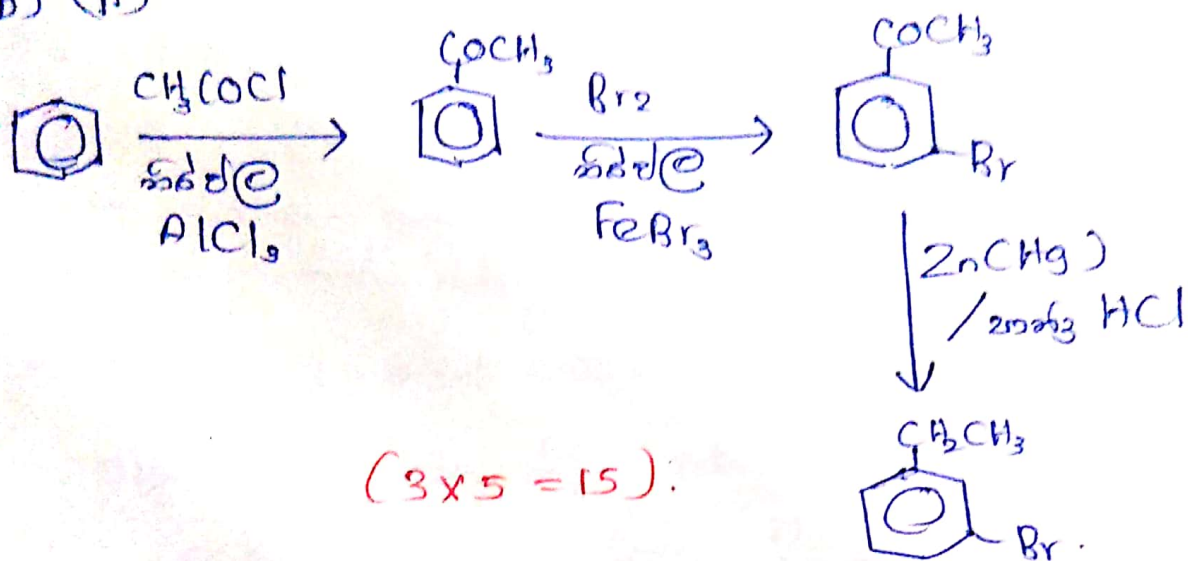
8 (a)



8(a) - 48



(8) (b) (ii)



(3x5 = 15):

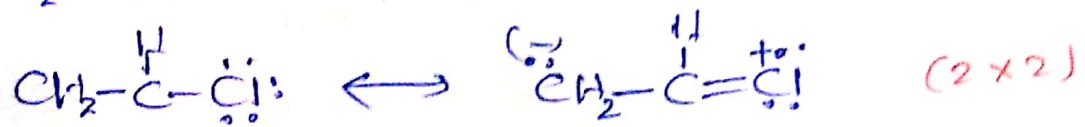
8(b) (ii) - 15

(C) i. $\text{CH}_3\overset{\text{Cl}}{\text{C}}\text{HCH}_3$ രക്ത പരമേന $\text{CH}_3\overset{\text{+}}{\text{C}}\text{HCH}_3$ പരിമാട ഹെ. (4)

രക്ത C-Cl പരിമാടന ഗുണ പരിമാടന ക്യാ പാശ്ചാത്യ പരിമാടന പരിമാടന. (3) രക്ത പരിമാടന ഹെ പരിമാടന പരിമാടന പരിമാടന. (3+3)

• $\text{CH}_2=\text{CHCl}$ രക്ത പരമേന $\text{CH}_2=\overset{\text{+}}{\text{C}}\text{H}$ പരിമാട ഹെ.

• $\text{CH}_2=\text{CHCl}$ പരിമാടന പരിമാടന പരിമാടന പരിമാടന.



• C-Cl പരിമാടന പരിമാടന പരിമാടന പരിമാടന. (3)

• $\text{CH}_2=\text{CHCl}$ രക്ത പരിമാടന ഹെ പരിമാടന പരിമാടന പരിമാടന പരിമാടന പരിമാടന. (3+3)

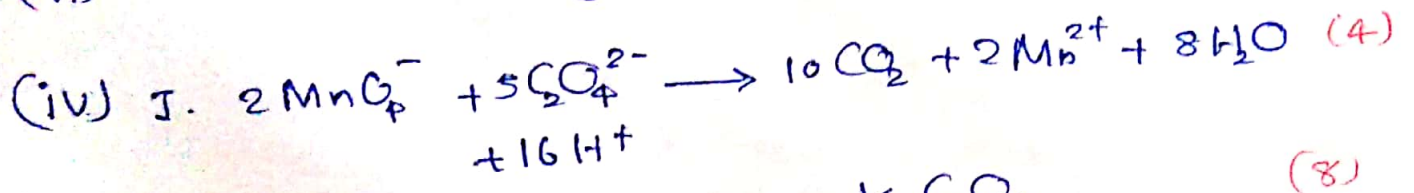
ii. $\text{CH}_2=\text{CHCl}$ (5)

09

- a) i. $X_1 - MnO_4^-$ $X_5 - Cl_2$
 $X_2 - MnO_4^{2-}$ $X_6 - Mn(OH)_2$
 $X_3 - MnO_2$ $X_7 - [MnCl_4]^{2-}$
 $X_4 - Mn^{2+}$ $X_8 - MnS$ (4x8)



(iii) tetrachloridomanganate(II) ion. (2)



II. අනුභවන ඵලාදායී - $K_2C_2O_4$ (8)
 ක්‍රියාකාරී - $KMnO_4$

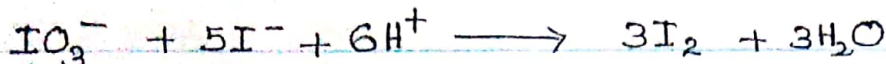
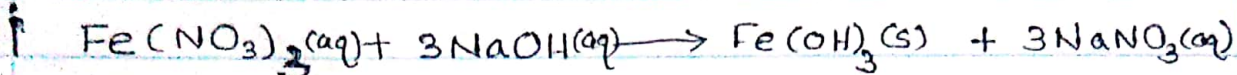
III. ප්‍රතික්‍රියාවේ ප්‍රභවය වන්නේ මන්ද? (5)

IV. අවස්ථා \rightarrow වර්ණ (5)

V. නැත.
 ජාත්‍යන්තර අතර වෙනස 0.1 cm^3 ට වඩා
 අඩු විය යුතුය. (10)

VI. පරමාණුක සංඛ්‍යාවන් මෙන්ම වෙනස් වීම.
 අවස්ථා පරමාණුක සංඛ්‍යාවන් මෙන්ම වෙනස් වීම. (4)

09. b.



(02) x 5

ii Fe_2O_3 වල මවුලික ස්කන්ධ = 160 g mol⁻¹ (01)

$$n_{\text{Fe}_2\text{O}_3} = \frac{0.152 \text{ g}}{160 \text{ g mol}^{-1}} = 9.5 \times 10^{-4} \text{ mol} \quad (02)$$

$$= 9.5 \times 10^{-4} \text{ mol} \quad (02)$$

$$n_{\text{Fe}_2\text{O}_3} : n_{\text{Fe}(\text{OH})_3} : n_{\text{Fe}(\text{NO}_3)_3} = 1 : 2 : 2 \quad (02)$$

$$\therefore 25.0 \text{ cm}^3 \text{ ක් කුළු දැති Fe}(\text{NO}_3)_3 \left. \begin{array}{l} \text{ප්‍රමාණය} \\ \text{ප්‍රමාණය} \end{array} \right\} = 2 \times 9.5 \times 10^{-4} \text{ mol} \quad (01)$$

$$= 1.9 \times 10^{-3} \text{ mol} \quad (02)$$

$$250.0 \text{ cm}^3 \text{ ක් කුළු දැති Fe}(\text{NO}_3)_3 \text{ ප්‍රමාණය} = 1.9 \times 10^{-3} \times \frac{250.0 \text{ cm}^3}{25.0 \text{ cm}^3} \quad (02)$$

$$= 1.9 \times 10^{-2} \text{ mol} \quad (02)$$

$$\text{ආවේණික මවුලයේ Fe}(\text{NO}_3)_3 \text{ ස්කන්ධය} = 1.9 \times 10^{-2} \text{ mol} \times 242 \text{ g mol}^{-1} \quad (02)$$

$$= 4.598 \text{ g}$$

$$\approx 4.60 \text{ g} \quad (02)$$

$$\text{Fe}(\text{NO}_3)_3 \text{ ස්කන්ධ \%} = \frac{4.60 \text{ g}}{6.0 \text{ g}} \times 100\% \quad (02)$$

$$= 76.67\% \quad (02)$$

$$Z \text{ ප්‍රමාණ } 50.0 \text{ cm}^3 \text{ ක දැති Fe}^{3+} \text{ ප්‍රමාණය} = 1.9 \times 10^{-2} \text{ mol} \times \frac{50 \text{ cm}^3}{250 \text{ cm}^3}$$

$$\left. \begin{array}{l} \text{කුළු කබල ලද ප්‍රමාණ } 100.0 \text{ cm}^3 \text{ දැති} \\ \text{Fe}^{3+} \text{ ප්‍රමාණය} \end{array} \right\} = \frac{1.9 \times 10^{-2} \times 50}{250} \text{ mol}$$

$$\left. \begin{array}{l} \text{කුළු කබල ලද ප්‍රමාණ } 25.0 \text{ cm}^3 \text{ දැති} \\ \text{Fe}^{3+} \text{ ප්‍රමාණය} \end{array} \right\} = \frac{1.9 \times 10^{-2} \times 50 \times 25}{250 \times 100} \text{ mol} \quad (02)$$

$$= 9.5 \times 10^{-4} \text{ mol} \quad (02)$$

$$n_{\text{Fe}^{3+}} : n_{\text{I}_2} = 2 : 1$$

$$\text{Fe}^{3+} \text{ සමග ප්‍රතික්‍රියාවේ I}_2 \text{ ප්‍රමාණය} = \frac{1}{2} \times 9.5 \times 10^{-4} \text{ mol} \quad (02)$$

$$= 4.75 \times 10^{-4} \text{ mol} \quad (02)$$

No:

Date:

ප්‍රතික්‍රියා කළ $S_2O_3^{2-}$ ප්‍රමාණය = $0.10 \text{ mol dm}^{-3} \times 13.5 \times 10^{-3} \text{ dm}^3$ (02)
 = $1.35 \times 10^{-3} \text{ mol}$ (02)

$n_{S_2O_3^{2-}} : n_{I_2} = 2 : 1$ (02)

$S_2O_3^{2-}$ සමඟ ප්‍රතික්‍රියා කරන I_2 ප්‍රමාණය = $1.35 \times 10^{-3} \text{ mol} \times \frac{1}{2}$ (02)
 = $6.75 \times 10^{-4} \text{ mol}$ (02)

IO_3^- මගින් මැණෙන I_2 ප්‍රමාණය = $6.75 \times 10^{-4} \text{ mol}$
 - $4.75 \times 10^{-4} \text{ mol}$ (02)
 = $2 \times 10^{-4} \text{ mol}$ (02)

$n_{IO_3^-} : n_{I_2} = 1 : 3$ (02)

$\therefore 25.0 \text{ cm}^3$ කළ අර්ධ IO_3^- ප්‍රමාණය = $\frac{1}{3} \times 2 \times 10^{-4} \text{ mol}$

250.0 cm^3 ක් කළ IO_3^- ප්‍රමාණය = $\frac{2}{3} \times 10^{-4} \times \frac{100}{25} \times \frac{250}{50} \text{ mol}$ (02)
 = $13.33 \times 10^{-4} \text{ mol}$ (02)

KIO_3 වල මවුලික ස්කන්ධය = 214 g mol^{-1} (02)

250.0 cm^3 ක් කළ KIO_3 ස්කන්ධය = $13.33 \times 10^{-4} \text{ mol} \times 214 \frac{\text{g}}{\text{mol}}$ (02)
 = 0.285 g

KIO_3 % = $\frac{0.285 \text{ g}}{6.0 \text{ g}} \times 100 \%$ (02)

= 4.75% (02)

iii IO_3^- හා I^- අතර ප්‍රතික්‍රියාවට අවශ්‍ය අවම මාත්‍රණය සැපයීම (02)

iv. I_2 , I^- සමඟ ප්‍රතික්‍රියාවෙන් පැදැණුණ I_3^- අයන සහ ඔක්සිජන් අන්තර්ගත අයන සහ අනෙකුත් අයන සහ අනෙකුත් අයන වැළැක්වීම (02)

v. බියුරෝමීටර හා ඊසෙලිමීටර (01 + 01)

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