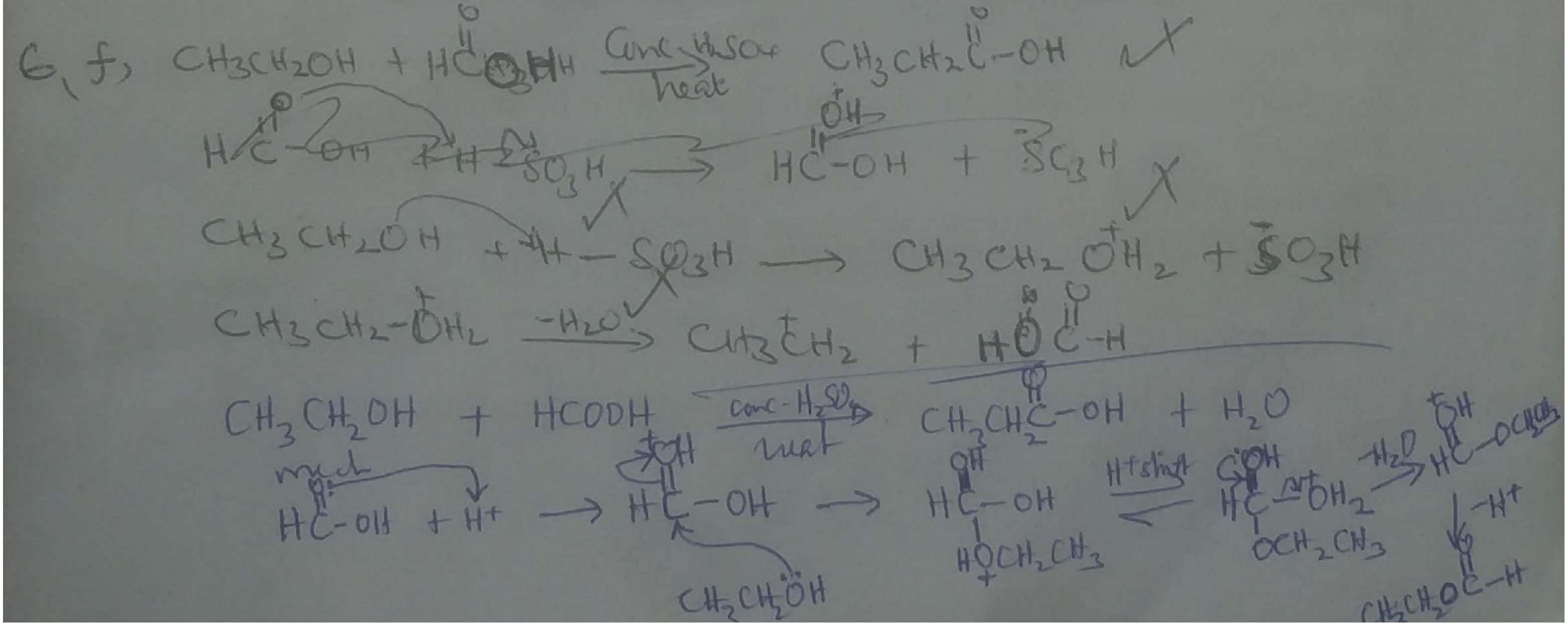
JINJA JOINT EXAMINATIONS BOARD

MOCK EXAMINATIONS 2022

CHEMISTRY P525/2

MARKING GUIDE



Expected response | Score

a)

Sodium	Na_2O ✓ or Na_2O_2	Rej. Names of oxides 03
Aluminium	Al_2O_3 ✓	
Silicon	SiO_2 ✓	
Phosphorous	P_2O_3 ✓ or P_4O_6 / P_2O_5 ✓ or P_4O_{10}	½ @ of oxides
Chlorine	Cl_2O_7 ✓ / Cl_2O	

Sodium oxide reacts with water to form an alkaline solution of sodium hydroxide. The pH of the resultant solution is greater than seven (7); ✓ above | N. mention both

$Na_2O_{(s)} + H_2O_{(l)} \longrightarrow 2NaOH_{(aq)}$ ✓

Aluminium oxide is insoluble and doesn't react with water; ✓ Does not react

Phosphorous (III) oxide reacts with water to form phosphorous acid ✓ while phosphorous (v) oxide reacts with water to form phosphoric acid. The pH of the resultant solution is less than seven (7) | pdt-½

$P_2O_{3(s)} + 3H_2O_{(l)} \longrightarrow 2H_3PO_{3(aq)}$ ✓ or $P_4O_{6(s)} + 6H_2O_{(l)} \longrightarrow 4H_3PO_{3(aq)}$ | matched reactants equation

$P_2O_{5(s)} + 3H_2O_{(l)} \longrightarrow 2H_3PO_{4(aq)}$ or $P_4O_{10(s)} + 6H_2O_{(l)} \longrightarrow 4H_3PO_{4(aq)}$

$Al_2O_{3(s)} + 2OH^-_{(aq)} \longrightarrow 2AlO^-_{2(aq)} + H_2O_{(l)}$ ✓ or

$Al_2O_{3(s)} + 2OH^-_{(aq)} + 3H_2O_{(l)} \longrightarrow 2Al(OH)^-_{4(aq)}$ or

$Al_2O_{3(s)} + 6OH^-_{(aq)} + 3H_2O_{(l)} \longrightarrow 2Al(OH)^{3-}_{6(aq)}$

$SiO_{2(s)} + 2OH^-_{(aq)} \longrightarrow SiO^{2-}_{3(aq)} + H_2O_{(l)}$ ✓

- Accept any correct
- Deny ½ for wrong or missing state
- rej unbalanced equation

Accept molecular eqns | 03

Silicon(iv) chloride

Directly heating silicon with dry chlorine gas ✓

$Si_{(s)} + 2Cl_{2(g)} \longrightarrow SiCl_{4(l)}$ ✓ ignore states | Deny ½ for wrong or missing states.

Alternative

Heating a mixture of silicon(iv) oxide and carbon in dry chlorine gas

$SiO_{2(s)} + 2Cl_{2(g)} + 2C_{(g)} \longrightarrow SiCl_{4(l)} + 2CO_{(g)}$

Aluminium chloride | 04

Passing dry chlorine gas over heated aluminium metal ✓

$2Al_{(s)} + 3Cl_{2(g)} \longrightarrow 2AlCl_{3(s)}$ ✓ ignore states | Deny ½ for wrong or missing states

Alternative

Passing dry hydrogen chloride gas over heated aluminium metal

$2Al_{(s)} + 6HCl_{(g)} \longrightarrow 2AlCl_{3(s)} + 3H_{2(g)}$

Alternative

Heating a mixture of Aluminium oxide and carbon in dry chlorine gas

$$Al_2O_{3(s)} + 3Cl_{2(g)} + 3C_{(g)} \longrightarrow 2AlCl_{3(s)} + 3CO_{(g)}$$

(d) White precipitate and bubbles aka colorless gas that turns lime water milky.

Explanation

The aluminium ion in aluminium chloride solution has a high charge density, reacts with water molecules in solution to form the insoluble aluminium hydroxide observed as a white precipitate and hydrogen ions. The hydrogen ions then react with the hydrogen carbonate ions from potassium hydrogen carbonate added to form carbon dioxide and water

accept hydrolysis

4½

Equation(s)

$$Al^{3+}_{(aq)} + 3H_2O_{(l)} \longrightarrow Al(OH)_{3(s)} + 3H^+_{(aq)}$$

or

$$H^+_{(aq)} + HCO^-_{3(aq)} \longrightarrow CO_{2\,(g)} + H_2O_{(l)}$$

Accept overall

$$Al^{3+}_{(aq)} + 3HCO^-_{3(aq)} \longrightarrow Al(OH)_{3(s)} + 3CO_{2\,(g)}$$

Alternatively

The aluminium ion in aluminium chloride solution forms hydrated ions of aluminium and due to high charge density of the aluminium ion it successively reacts with the water molecules to form the insoluble aluminium hydroxide observed as a white precipitate and hydroxonium ions. The hydroxonium ions then react with the hydrogen carbonate ions from potassium hydrogen carbonate added to form carbon dioxide and water

Equation(s)

$$Al(H_2O)^{3+}_{6(aq)} + 3H_2O_{(l)} \longrightarrow Al(OH)_3(H_2O)_{3(s)} + 3H_3O^+_{(aq)}$$

$$H_3O^+_{(aq)} + HCO^-_{3(aq)} \longrightarrow CO_{2\,(g)} + 2H_2O_{(l)}$$

Accept overall

$$Al(H_2O)^{3+}_{6(aq)} + 3HCO^-_{3(aq)} \longrightarrow Al(OH)_3(H_2O)_{3(s)} + CO_{2\,(g)} + 3H_2O_{(l)}$$

T=20

2(a)i Order of reaction;

This is the power to which the concentration of reactants is raised to in an experimentally determined rate equation.

01

or

This is the sum of the powers to which the concentrations of reactants are raised to in an experimentally determined rate equation.

Alternative

Heating a mixture of Aluminium oxide and carbon in dry chlorine gas

$Al_2O_{3(s)} + 3Cl_{2(g)} + 3C_{(g)} \longrightarrow 2AlCl_{3(s)} + 3CO_{(g)}$

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Accept overall

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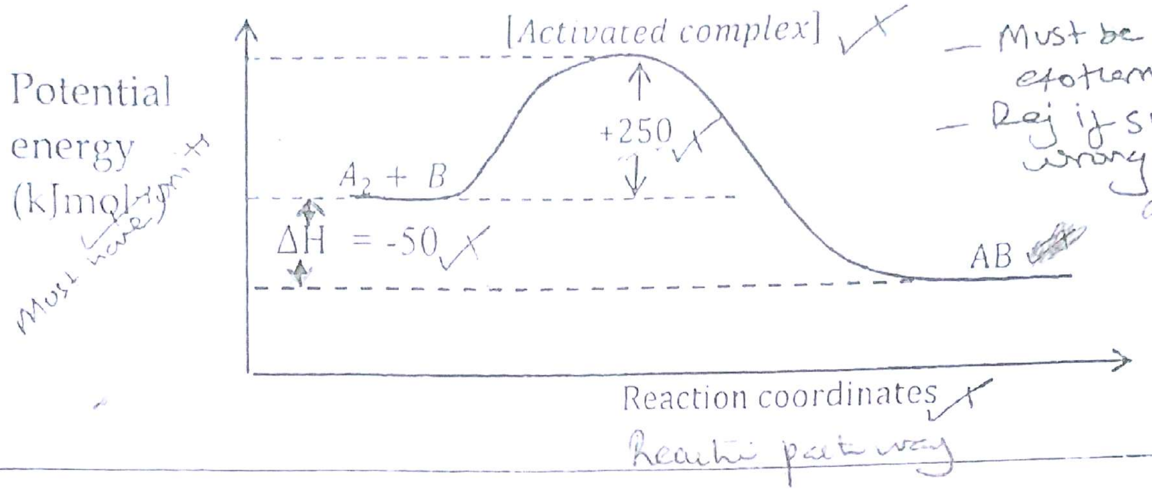
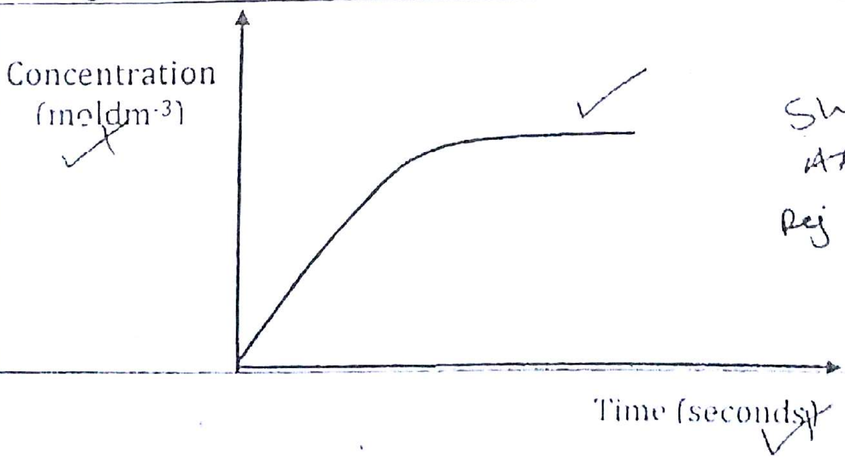
01

ii	Molecularity The number of chemical species that participate in the rate determining step of a chemical reaction to form an activated complex. Accept without Activated cplex.	01
iii	Elementary reaction This is a chemical reaction in which ~~on~~ one or more chemical species react directly to form products in a single reaction step and with a single transition state.	01
(b)i	Order of reaction with respect to B is 2 Reason (using calculation in experiment 2 and 3) $Rate = K[A_2]^x[B]^y.$ $\frac{2.7x10^{-4}}{1.2x10^{-4}} = \frac{K(0.06)^x(0.09)^y}{K(0.006)^x(0.06)^y}$ $(1.5)^2=(1.5)^y$ $y = 2$ or When Conc. of A is constant & that [B] increased by 1.5 times the rate of rxn increases by 2.25 times. Order of reaction with respect to B becomes 2 Order of reaction with respect to A_2 is 0(zero) Reason (using calculation in experiment 1 and 2) $Rate = K[A_2]^x[B]^y.$ $\frac{1.2x10^{-4}}{0.3x10^{-4}} = \frac{K(0.06)^x(0.06)^2}{K(0.03)^x(0.03)^2}$ $(1)^0=(2)^x$ $x = 0$ But doubling [A] & [B] i.e. The rate of reaction ↑sed 4 times: Depending on B only i.e. 2nd order reaction	02
ii	$Rate = K[B]^2$. Accept $Rate = K[A_2]^0[B]^2$	$0\frac{1}{2}$
iii	Using experiment 1 $Rate = K[B]^2,$ $0.3x10^{-4} = K(0.03)^2,$ $K = 0.033\ mol^{-1}lS^{-1}$ $1\ mol^{-1}s^{-1}$ Deny mark for answer to 2dps.	$0\frac{1}{2}$

(C) i	 – Must be exothermic – Rej if shape is wrong / Award for axes only	2½
ii	Activation energy for the back word reaction $250 + (-50) = +200 kjmol^{-1}$ Ignore units / penalty ½ if + is missing	01
(d) i	The equilbrium constant Kc decreases. Increasing temperature favours the backward reaction since the forward is exothermic. The products dissociates to form more of the reactants, this increases the concentration of reactants while decreasing the concentration of produts hence decreasing the equilibrium constant.	2½
ii	The equilbrium position shifts from righ to left Increasing temperature favours the backward reaction since the forward is exothermic. At equilibrium,the proportion of products is lowerer than reactants hence position of equilibrium is to the left	2½
iii	Increasing temperature increases rate of reaction, this is because at higher temperature, the average kinetic energy of the particles increases, so more reacting particles have energy equal to or greater than the activation energy, also the reacting particles move at higher speed, the frequency of collision between the reacting particles increases. This causes the frequency of effective collision to increase. More products are formed per unit time and hence the rate of reaction is higher	2½
d	 Shape = 01 Axes = 01 Rej without units	02
		T = 20

3			
	Mass of CO_2 formed	= $\left(\frac{44x3.36}{22.4}\right)$	$=6.6g$
	Mass of C in CO_2	= $\left(\frac{12x6.6}{44}\right)$	$=1.8g$
	Mass (M) of N in N_2	= $\left(\frac{MrxPV}{RT}\right)$	
		= $\left(\frac{28x1x295.5x10^{-3}}{0.082x288}\right)$	$= 0.35g$
	Mass of H	= $(2.325-0.35-1.8)$	$= 0.175$

Element	C	H	N
Mass	1.8	0.175	0.35
Moles	$\frac{1.8}{12}$	$\frac{0.175}{1}$	$\frac{0.35}{14}$
	0.15	0.175	0.025
Mole ratio	$\frac{0.15}{0.025}$	$\frac{0.175}{0.025}$	$\frac{0.025}{0.025}$
	6	7	1
Empirical formula	C_6H_7N		

06

(b)i

$$\frac{\%\ by\ mass\ of\ H_2O}{\%\ by\ mass\ of\ Q} = \frac{Vapour\ pressure\ of\ H_2O\ x\ MrH_2O}{Vapour\ pressure\ of\ Q\ x\ MrQ}$$

Vapour pressure of Q = (760-655) = 105 mmHg

$$MrQ = \frac{655\ x\ 18x45.49}{105(100-45.49)} = 93.71$$

03

$(C_6H_7N)_n$ = 93.71

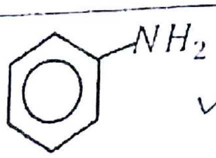
$(12x6n)+(1(x7n)+(14xn)$ = 93.71

93n = 93.71

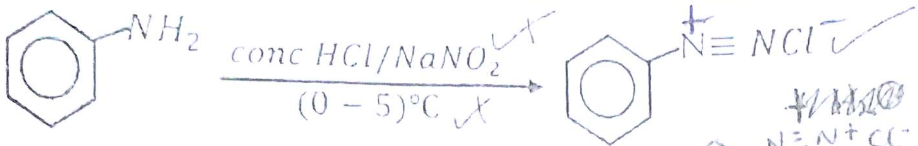
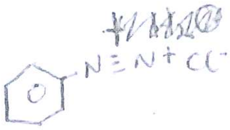
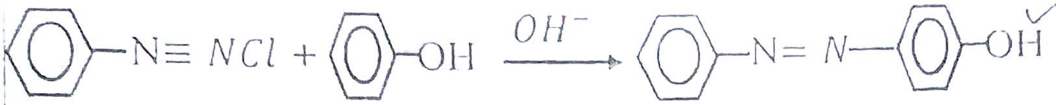
n = 1

molecular formula= $(C_6H_7N)_1$ = C_6H_7N

(ii)



01

(c) i	  Ignore nitrous acid 2 Score condition.	
(ii)	Observation: yellow precipitate / ~~orange precipitate~~ Equation 	02
(d) (i)	Amino benzene is reacted with a mixture of concentrated hydrochloric acid and sodium nitrite at ice cold conditions (0-5)°C to form benzene diazonium chloride which is hydrolysed(reacted with water) on warming to phenol. Phenol is then reduced to benzene when heated in the presence of zinc dust .benzene is then reacted with concentrated nitric acid in presence of concentrated sulphuric acid at range between (55-60) °C to form nitrobenzene. **Alternatively** Amino benzene reacted with a mixture of concentrated hydrochloric acid at a temperature greater than 10°C to form phenol. Phenol is then reduced to benzene when heated in the presence of zinc dust .benzene is then reacted with concentrated nitric acid in presence of concentrated sulphuric acid at range between (55-60) °C to form nitrobenzene.	03 or
(ii)	Benzene sulphonic acid is heated with solid sodium hydroxide to form sodium phenoxide which reacted with dilute hdrochloric acid to form phenol. Phenol is then reduced to benzene when heated with zinc dust. Benzene formed istreated with concentrated nitric acid in presence of concentrated sulphuric acid at (55-60) °C to form nitrobenzene which is reduced when heated with tin in presence concentrated hydrochloric to form a salt that is reacted with concentrated sodium hydroxide to form aminobenzene.	03 T=20
4(a)	Both propanone and chloroform are polar compounds. The polarity in propanone is due to difference in electronegativity between carbon and the oxygen atom making the C=O bond polarized while the polarity in chloroform is due to a high electronegativity of the three chlorine atoms which creates a partial positive charge to the hydrogen atom.	

The cohesive forces of attraction between Pure Chloroform molecules and pure propanone molecules are van-der Waals forces of attraction, however When mixed the adhesive forces formed are Intermolecular hydrogen bonds

$(CH_3)_2C = O^{\delta-}$-------------------------$^{+\delta}H-CCl_3$

The Intermolecular hydrogen bonds are stronger adhesive forces formed with evolution of heat and contraction of volume.

04

Oxidizable hydrogen aldehyde group

(b) Methanoic acid has a hydrogen atom attached to the carboxyl group $(H-COOH)$. This makes methanoic acid to show properties of the carboxyl and aldehyde group, therefore can be oxidized by silver ions in ammoniacal silver nitrate solution to carbon dioxide and silver metal

Ignore bal

$$HCOOH_{(l)} + 2Ag(NH_3)^+_{2(aq)} + H_2O_{(l)} \longrightarrow CO_{2(g)} + 2Ag_{(s)} + NH^+_{4(aq)}$$

In ethanoic acid (CH_3COOH), there is a methyl group attached to the carboxyl group making ethanoic acid to have only carboxylic acid properties and is resistant to oxidation hence doesn't react with ammoniacal silver nitrate solution.

CH3COOH lacks oxidizable hydrogens

04

(c) The fluorine atom in hydrofluoric acid is very electronegative due to a very small atomic radius forming a very strong bond with the hydrogen atom, therefore when hydrofluoric acid is dissolved in water doesn't readily release the hydrogen ion making it a weak acid

$$HF_{(l)} + H_2O_{(l)} \rightleftharpoons H_3O^+_{(aq)} + F^-_{(aq)}$$

However in high concentration, the fluoride ion released reacts with the hydrofluoric acid molecules to form a hydrogen difluoride ion (HF_2^-).

$$HF_{(l)} + F^-_{(aq)} \longrightarrow HF^-_{2(aq)}$$

This reduces the concentration of fluoride ions at equilibrium, therefore more of the hydrogen fluoride molecules dissolve releasing fluoride ions and more of the hydrogen ions which shifts the equilibrium to the right making. HF more acidic

05

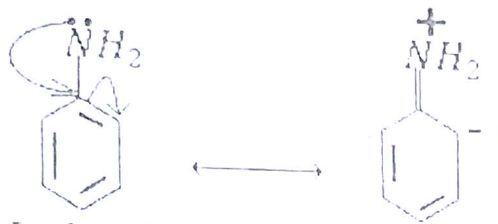
(d) Benzene and water molecules do not interact therefore form an immiscible mixture in which each of the components contributes its own vapour pressure independent of the other such that the total vapour pressure above the mixture is the sum of the vapour pressure contributed by benzene and water ~~molecules which will be too high compared~~ to the vapour pressure of either component. The mixture will boil at a lower temperature because less heat is needed to generate enough molecules into the vapour phase that can cause the vapour pressure of the mixture to be equal to atmospheric pressure.

03

The total vapour pressure equates to atmospheric press. at lower temp. hence lower boiling point for the mixture.

Benzene has van derwaals forces and water molecules are ... hydrogen bonding hence immiscible mixture

(e) The strength of a base depends on the ease of donation of electrons. In phenyl amine, the lone pairs of electrons on the nitrogen atom interact with the delocalized pie bonding system of the Benzene ring which makes them less available for donation



In the ethyl amine the ethyl group that has a positive inductive effect tends to push electrons towards the nitrogen atom which increase electron density on the nitrogen atom and makes the lone pairs of electrons more available for donation.

04

T=20

5(a)i This is a reaction between water and a salt to form a solution whose PH is either less or greater than seven (7). For example A sodium salt of a carboxylic acid like ethanoic acid reacts with water to form a solution whose pH is greater than seven while a salt formed from a weak base and strong acid like ammonium chloride reacts with water to form a solution whose PH is less than seven

02

(ii) This is a mixture of a weak acid and its salt formed from a strong base which resists change in pH when a small amount of acid or base is added to it. These buffer solutions maintain PH of the solution less than seven.
Example include mixture of carboxylic acids and their sodium or potassium salts e.g ethanoic acid and sodium ethanoate solution

02

(b) Soap is a sodium or potassium salt of a long chained carboxylic acid (RCOONa), this salt undergoes hydrolysis in water to form a weak organic acid and hydroxyl ions according to the equation below;

$$\cancel{RCOO^-_{(aq)} + H_2O_{(l)} \rightleftharpoons RCOOH_{(aq)} + OH^-_{(aq)}}$$

The hydroxyl ions released in solution make soap solutions alkaline and readily reacts with aluminium utensils during the washing process and slowly wear it down.

$$2Al_{(s)} + 2OH^-_{(aq)} + 6H_2O_{(l)} \longrightarrow 2Al(OH)^-_{4\,(aq)} + 3H_{2(g)}$$

Ignore states

or

$$2Al_{(s)} + 6OH^-_{(aq)} + 6H_2O_{(l)} \longrightarrow 2Al(OH)^{3-}_{6\,(aq)} + 3H_{2(g)}$$

03

See graph attached	Axes = 01 (units on horizontal) plot points 01 deny ½ for any wrongly plotted point. Shape = 01	03
Initially the PH of the acid is 2.8 because ethanoic acid is a weak acid that partially ionizes to release a low concentration of hydrogen ions. The PH rises gradually as sodium hydroxide solution is being added because the hydroxyl ions from the base neutralize the hydrogen ions form the acid but the salt formed sodium ethanoate together with the un reacted ethanoic acid form a buffer that resist change in PH. At the end point there is a sharp rise in PH due to complete neutralisation with little addition of sodium hydroxide. The PH at end point is greater than seven because the salt formed undergoes hydrolysis to release hydroxyl ions in solution. There is gradual rise in PH after end point due to excess of sodium hydroxide added.		03
From the graph PH= $\frac{10.5+7}{2}$ = 8.75 ± 0.25 the graph paper	Must be shown on the graph paper	01
Moles of ethanoic acid reacted = $\frac{25x0.1}{1000}$ = 0.0025 $CH_3COOH_{(aq)} + NaOH_{(aq)} \longrightarrow CH_3COONa_{(aq)} + H_2O_{(l)}$ From the equation moles of sodium hydroxide reacted with ethanoic acid is 0.0025 since mole ratio is 1:1 22.6 cm3 of solution contain 0.0025 moles of sodium hydroxide 1000cm^3 of solution will contain $\frac{0.0025x1000}{22.6}$ = 0.11M		02
Moles of salt formed at neutralization = moles of ethanoic acid = 0.0025 Volume of solution at end point = 22.6 + 25 = 47.60cm^3 47.60cm^3 of solution contains 0.0025 moles of the salt 1000cm^3 of the solution will contain $\frac{0.0025x1000}{47.60}$ = 0.0053M PH + POH = 14 POH= 14-8.75 = 5.25 $-\log_{10}[OH^-] = 5.25$ $[OH^-] = 10^{-5.25}$ = 5.62x10^{-6}moldm^{-3} $Kh = \frac{[OH^-]^2}{[salt]}$		

Scanned by CamScanner

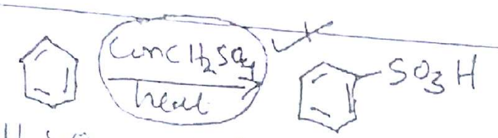
$$Kh = \frac{(5.62\times10^{-5})^2}{0.053} = 5.959\times10^{-10}\,moldm$$ ✓

But $Ku = Kh\,Ka$ ✓

$$Ka = \frac{(1.0\times10^{-14})}{5.959\times10^{-10}} = 1.678\times10^{-5}\,moldm^{-3}$$ ✓ 04

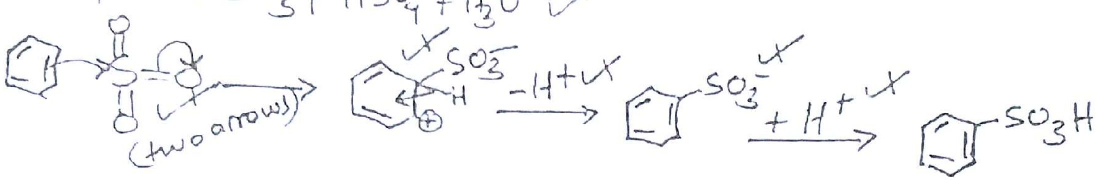
T=20

6(a)



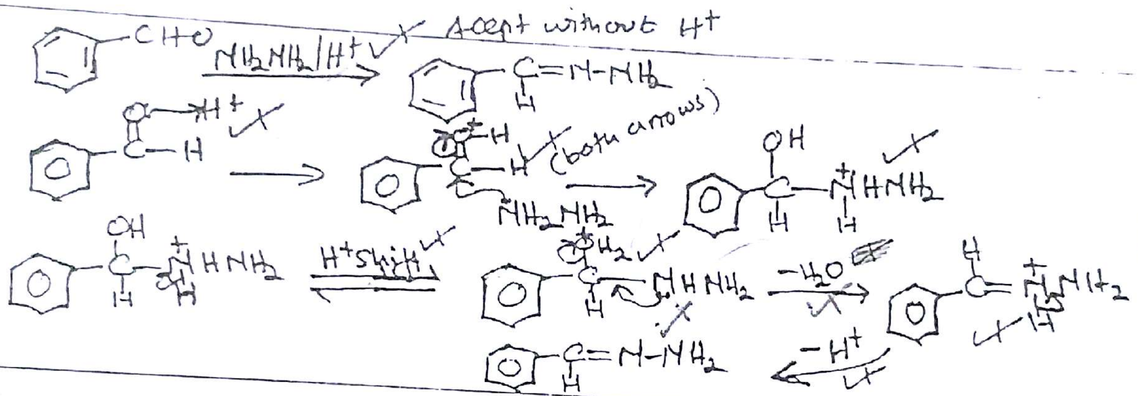
Accept fuming H_2SO_4 at (35–50)°c

$2H_2SO_4 \longrightarrow SO_3 + HSO_4^- + H_3O^+$ ✓



3½

b



Accept without H^+

4½

c

$(CH_3)_3C-Cl \xrightarrow[warm]{H_2O} (CH_3)_3C-OH$ ✓ Accept ^-OH ions/reflux

$(CH_3)_3C-Cl \rightleftharpoons (CH_3)_3\overset{+}{C}$ ✓ $+ Cl^-$ ✓

$(CH_3)_3\overset{+}{C} + \ddot{O}H_2$ ✓ $\longrightarrow (CH_3)_3C-\overset{+}{O}H_2 \xrightarrow{-H^+} (CH_3)_3C-OH$ ✓

02½

d

$CH_3\cancel{CH_2}Br + HC\equiv CNa$ ✓ $\xrightarrow{dry\ ether}$ ~~ignore dry ether~~ $CH_3\cancel{CH_2}C\equiv CH + NaBr$

$HC\equiv CNa \longrightarrow HC\equiv C^- + Na^+$ ✓

$CH_3\cancel{CH_2}-Br$ ✓ (both arrows) $\longrightarrow CH_3\cancel{CH_2}C\equiv CH$

$HC\equiv C^-$

$CH_3C\equiv CH$

1½

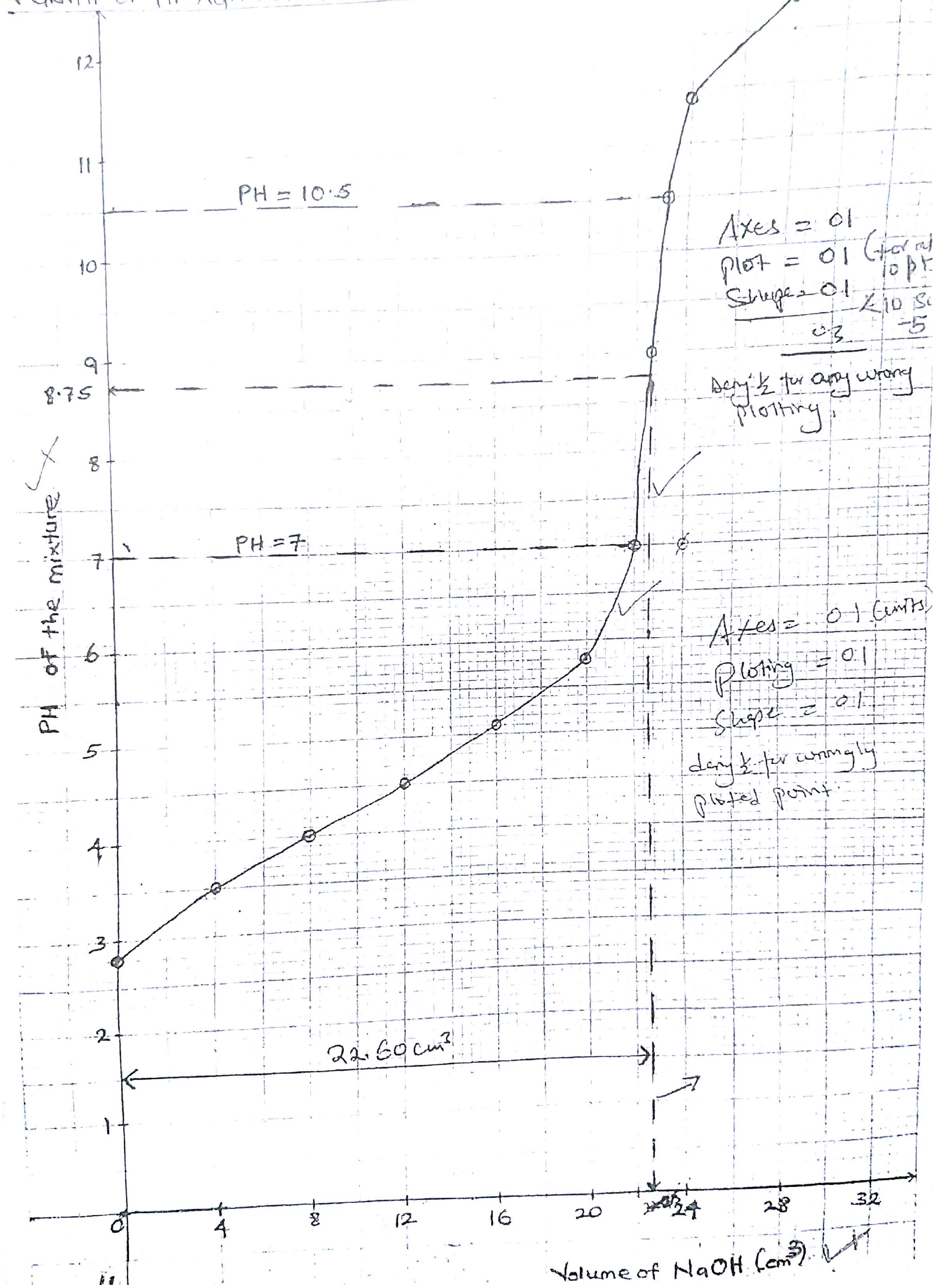
(e) $CH_3CH_2CH=CH_2 + HBr$ ✓ $\xrightarrow{RO-OR} CH_3CH_2CH_2Br$ ✓

10 $(R-O)_2 \longrightarrow RO^\circ$

$RO^\circ\ H-Br \longrightarrow ROH + Br^\circ$ ✓

$CH_3CH=CH_2\ Br^\circ$ ✓ ... $CH_3\dot{C}H-CH_2Br + H-Br$ ✓ ✓

A GRAPH OF PH AGAINST VOLUME OF SODIUM HYDROXIDE SOLUTION



Condensation polymers are compounds formed when two bifunctional monomers combine with loss of small/simple molecules eg water

Blister copper is purified by electrolysis in which the crude metal is made the anode while a thin sheet of pure copper is made the cathode and the electrolyte is copper(II) sulphate solution.
Impure (blister) copper dissolves at the anode and is deposted at the cathode

Equations

Anode : $Cu_{(s)} \longrightarrow Cu^{2+}_{(aq)} + 2e$

Cathode : $Cu^{2+}_{(aq)} + 2e \longrightarrow Cu_{(s)}$ — 1½

b(i) The gaseous bi product of extraction of copper is sulphurdioxide which is a starting material in the contact process — 1½

(ii)

$$2SO_{2(g)} + O_{2(g)} \underset{(400-450)°C}{\overset{V_2O_5}{\rightleftharpoons}} 2SO_{3(g)}$$

Deny ½ without ⇌

½ without conditions

All states must be correct and equation must be balanced.

$$SO_{3(g)} + H_2SO_{4(l)} \longrightarrow H_2S_2O_{7(l)}$$

$$H_2S_2O_{7(l)} + H_2O_{(l)} \longrightarrow 2H_2SO_{4(l)}$$

03

(c) Blue solutions turns yellow then back to blue on dilution

$$Cu(H_2O)^{2+}_{4(aq)} + 4Cl^-_{(aq)} \rightleftharpoons CuCl^{2-}_{4(aq)} + 4H_2O_{(l)}$$

Deny ½ for →

2½

T = 20

8(a)i (Thermoplastics) ~~Thermosetting~~ plastics are linear or branched polymers that become soft (softening) and melt when heated and therefore can be remoulded into different shapes e.g polyethene, polyvinyl chloride, perspex e.tc Accept any one example

Thermosetting plastics are ~~highly~~ crosslinked polymers which do not soften but decompose when heated,thus cannot be remoulded e.g melamine, bakelite e.t.c Carbamide-methanol (urea-formaldehyde) phenol-methanal — 03

(ii) Addition polymers are compounds of high molecular mass formed when unsaturated monomers combine repeatedly in a uniform pattern without loss of small molecules to form a single compound of high molecular mass(polymer) with same empirical formula as the monomer. Eg formation of polyethene. pvc, paspex, rubber e.t.c Accept one example

Condesation polymers refer to compounds of high molecular mass formed by combining two bifunctional monomers with elimination of

Addition polymers are compounds of high molecular mass formed when very many molecules of one unsaturated compound combine without loss of water molecules. While

	small molecules like water, hydrogen chloride, ammonia, carbondioxide e.t.c	03
b(i)	Natural rubber $-\!\!\left(CH_2\overset{\overset{CH_3}{\vert}}{C}=CHCH_2\right)_{n}\!\!-$ Nylon6,10 $-\!\!\left[\overset{\overset{H}{\vert}}{N}(CH_2)_6\overset{\overset{H}{\vert}}{N}-\overset{\overset{O}{\Vert}}{C}(CH_2)_8\overset{\overset{O}{\Vert}}{C}\right]_{n}\!\!-$	02
(ii)	Natural rubber 2-methylbuta-1,3-diene $H_2C=\overset{\overset{CH_3}{\vert}}{C}-CH=CH_2$ Nylon 6,10 Decane-1,10-dioic acid $HOOC(CH_2)_8COOH$ or Decane-1,10-dioylchloride $ClOC(CH_2)_8COCl$ and Hexane-1,6-diamine $H_2N(CH_2)_6NH_2$	03
(c)i	Natural rubber is mixed with a specific amount of sulphur and heated in the presence of accelerateor and activators to form short sulphur cross linkages between the rubber polymer chains and decrease the degree of unsaturation to make it more elastic, durable and greater tensile strength.	04
(ii)	• Make tyres and inner tubes • Make shoe soles • Make horse pipes • Make sanitary gloves • Make proof gum boots Acept any two correct uses.	01
d(i)	$PV=\frac{M}{Mr}RT;$ $pressure=\left(\frac{0.155}{760}\right)$=0.000204 atm $Mr=\frac{M}{PV}RT.$ $Mr=\frac{2x0.082x298}{0.000204x1}$ = 234961.54	03
(ii)	• Make threads, ropes, mosquito nets, fishing nets, fabrics Accept any correct two	

END