

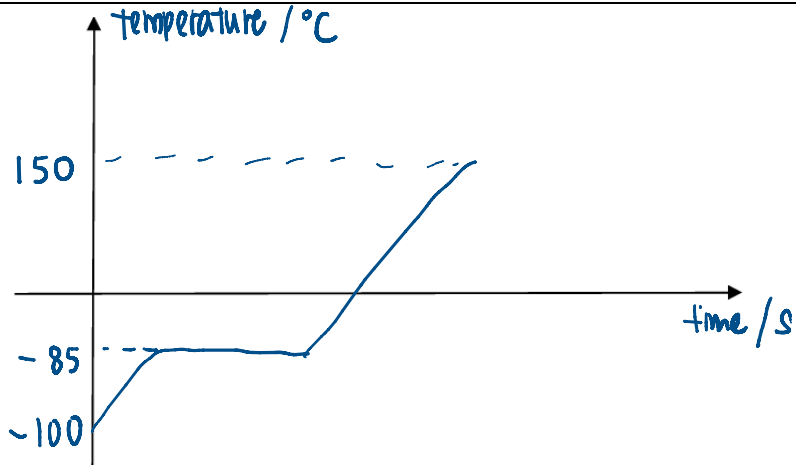
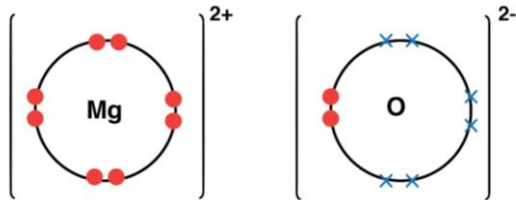
ASSUMPTION ENGLISH SCHOOL
Secondary 4E / 5N Prelim 2025
Science(Chemistry) 5086/5088 – Marking Scheme

Paper 1: (20 marks)

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	D	A	A	D	B	A	B	C	A
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
B	A	C	D	A	D	D	C	D	C

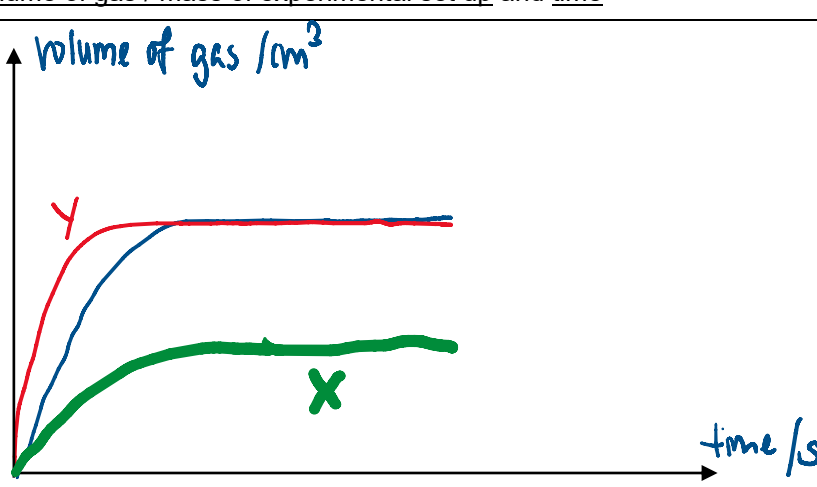
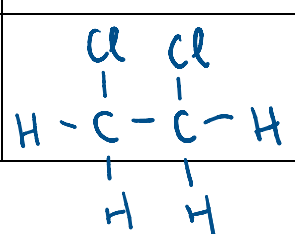
Paper 3 SECTION A: (55 marks)

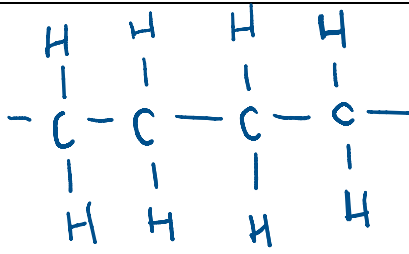
1	(a)	carbon monoxide	[1]
	(b)	sulfur dioxide	[1]
	(c)	aluminium oxide	[1]
	(d)	sulfur	[1]
	(e)	calcium hydroxide	[1]
	(f)	methane	[1]
2	(a)(i)	D	[1]
	(a)(ii)	E	[1]
	(a)(iii)	A	[1]
	(b)(i)	B and C	[1]
	(b)(ii)	Yes, they have the same electronic configuration / number of electrons. <u>Or</u> Yes, they lose, gain or share the same no. of electrons during reactions.	[1]
	(c)	carbon dioxide	[1]
	(d)	The gas is a <u>covalent molecule</u> that is <u>held together by weak intermolecular forces of attraction</u> , where <u>little energy is needed to overcome</u> , resulting in a <u>low melting point</u> . Award 1m for every 2 correct points	[2]
3		A – mixture, B – compound, C – element, D – compound	[4]

4		Cracking decomposition exothermic	[3]
5	(a)	Movement of particles changes from <u>sliding over one another</u> to <u>moving randomly at high speeds</u> . Arrangement of particles changes from <u>disorderly and quite closely packed</u> to <u>spaced far apart</u> . Award 1m for every 2 correct points	[2]
	(b)	 Award 1m for shape of graph Award 1m for labelling of temperature and axes	[2]
	(c)(i)	Fractional distillation	[1]
	(c)(ii)	They are liquids that have different boiling points.	[1]
6	(a)	<u>W and X show two spots in chromatogram with water as solvent and ethanol as solvent respectively</u>	[1]
	(b)	Pencil lead is <u>insoluble in the solvent</u> and <u>does not affect the results</u> .	[1]
7	(a)	<u>Ions are fixed in position</u> , hence there are <u>no mobile ions to conduct electricity</u> .	[1]
	(b)	O ²⁻ : 10, 16 Mg ²⁺ : 12, 12 Award 1m for every 2 correct answers	[2]
	(c)		[2]

8	(a)	P: copper(II) oxide / CuO Q: hydrochloric acid / HCl R: copper(II) chloride / CuCl ₂ S: silver chloride / AgCl T: copper(II) hydroxide / Cu(OH) ₂ Award 1m for every 1 correct answer	[5]
	(b)	$\text{Ag}^+ (\text{aq}) + \text{Cl}^- (\text{aq}) \rightarrow \text{AgCl} (\text{s})$ Accept answer without state symbol	[1]
9	(a)(i)	Colourless solution turns brown.	[1]
	(a)(ii)	<u>Chlorine is more reactive than iodine</u> and <u>is able to displace iodine</u> from potassium iodide.	[1]
	(b)(i)	pH 1 / 2	[1]
	(b)(ii)	Bubbles of gas seen. <u>Hydrogen ions are acidic</u> and will react with carbonates to <u>form carbon dioxide gas</u> .	[1] [1]
10	(a)	Reactivity increases down the group. Melting point decreases down the group.	[1] [1]
	(b)(i)	Test: Place a lighted splint in the path of the gas. Observation: Flame extinguishes with a pop sound.	[1]
	(b)(ii)	Similarity - Bubbles of gas produced - Temperature of mixture increases (exothermic) Difference - Reaction with potassium is more violent / faster / explosive	[2]
	(c)(i)	+3	[1]
	(c)(ii)	CO It gains oxidation state / oxygen atom and is oxidised Or It causes iron(III) oxide to lose oxygen and be reduced.	[1]
	(c)(iii)	20% of 2 kg = 400 g	[1]
	(c)(iv)	No. of moles of iron(III) oxide = mass / Mr = 400 / 160 = 2.5 mol No. of moles of CO ₂ = 7.5 mol Volume of CO ₂ = 7.5 x 25 = 180 dm ³	[1] [1]

Paper 3 SECTION B: (10 marks)

11	(a)	No. of moles of $\text{Na}_2\text{CO}_3 = 7.95 / 106 = 0.075 \text{ mol}$ Concentration = $0.075 / (50/1000) = 1.5 \text{ mol/dm}^3$	[1] [1]
	(b)	<u>Volume of gas / mass of experimental set up and time</u>	[1]
	(c) (d)(i) (d)(ii)	 Award 1m for shape of graph and 1m for correct axes. If (b) mentioned mass of experimental set up, then accept graph of mass vs time instead.	[2]
	(e)	At a <u>higher concentration</u> , there are <u>more reactant particles per unit volume</u> available for collision. Thus <u>frequency of effective collisions is higher</u> and hence <u>the rate of reaction will be faster, giving a steeper graph.</u>	[1] [1]
	(f)	No effect.	[1]
12	(a)	Ethanoic acid / CH_3COOH	[1]
	(b)	Name: fermentation Conditions: 37°C , absence of oxygen gas	[1] [1]
	(c)	Type of reaction: oxidation Observation: purple acidified potassium manganate(VII) turns colourless / pink.	[1] [1]
	(d)	Test: Bubble the gases in aqueous bromine solution / Add aqueous bromine to B and D. B: Reddish brown bromine turns colourless D: Reddish brown bromine stays the same. Award 1m for 1-2 correct, 2m for all 3 correct	[2]
	(e)		[1]

	(f)(i)		[1]
	(f)(ii)	Physical Method: Mechanical Recycling – Plastics are sorted, <u>shredded</u> into small pieces <u>before melting</u> and cut into pellets Chemical Method: Cracking – Plastics are <u>broken down</u> under certain conditions <u>into raw materials</u>	[1]