



**WOODLANDS SECONDARY SCHOOL
PRELIMINARY EXAMINATION 2023
MARKING SCHEME**

Level:	Secondary Four Normal (Academic)	Marks:	50
Subject:	Science (Chemistry)	Day:	Wednesday
Subject code:	5105 and 5107	Date:	2 August 2023
Duration:	1 hour 15 min (for both papers)	Time:	1145 – 1300

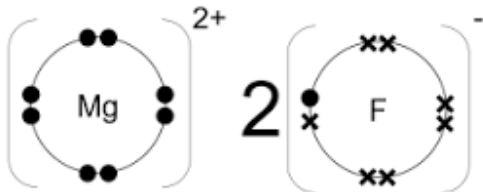
Paper 3 (20 marks)

1	C	11	A
2	B	12	C
3	D	13	D
4	A	14	A
5	A	15	B
6	A	16	C
7	C	17	D
8	C	18	B
9	A	19	A
10	A	20	B

Paper 4 Section A (14 marks)

1		Total = 4
(a)	Propene / C ₃ H ₆	1
(b)	Hydrogen / H ₂	1
(c)	potassium hydroxide / KOH	1
(d)	sulfuric acid / H ₂ SO ₄	1

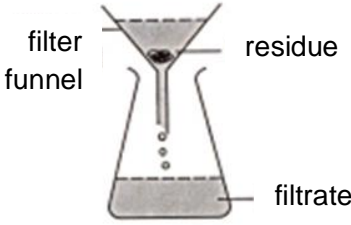
2		Total = 6
(a)	Alkanes C _n H _{2n+2} (allow for error carried forward)	1 1
(b)	Propane M _r (C ₃ H ₈) = (12×3)+(1×8) = 44 $ \begin{array}{c} \text{H} & \text{H} & \text{H} \\ & & \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{H} \\ & & \\ \text{H} & \text{H} & \text{H} \end{array} $ (allow for error carried forward)	1 1 1
(c)	C ₃ H ₈ + 5 O ₂ → 3 CO ₂ + 4 H ₂ O (No mark if any mistake in the equation) (allow for error carried forward)	1

3							Total = 4	
(a)	atom	nucleon number	proton number	number of protons	number of electrons	number of neutrons		
	magnesium	24	12	12	12	12	1	
	fluorine	19	9	9	9	10	1	
(b)	<div><p>Legend</p><ul style="list-style-type: none">● Electron from magnesium× Electron from fluorine<ul style="list-style-type: none">electrons are correctly drawn, including the electrons transferredthe charges are correctcorrect ratio of ions<p>All 3 points met [2] 1-2 points met [1]</p></div>						2	

Paper 4 Section B (16 marks)

4		Total = 8
(a)	Burette (no mark for spelling mistake)	1
(b)(i)	<p> <ul style="list-style-type: none"> all points correctly plotted [1] straight line of best fit correctly drawn [1] <ul style="list-style-type: none"> must have same number of points on both sides of the line </p>	2
(b)(ii)	39°C (±1°C)	1
(c) (i)	$\text{KOH (aq)} + \text{HCl (aq)} \rightarrow \text{KCl (aq)} + \text{H}_2\text{O (l)}$ <p>(No mark if any mistake)</p>	1
(ii)	$\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$	1
(d)	Amphoteric oxide ZnO or Al ₂ O ₃ or PbO	1 1

5		Total = 8
(a)(i)	Group I	1
(a)(ii)	Store in oil	1
(a)(iii)	$2\text{X} + 2\text{H}_2\text{O} \rightarrow 2\text{XOH} + \text{H}_2$	1

(b)(i)	 <p>[1 mark for correct labelling]</p> <p>Name of method: Filtration</p>	<p>1</p> <p>1</p>
(b)(ii)	The ions in solid silver chloride are held in fixed position , so they cannot move around to conduct electricity.	1
(b)(iii)	The ions change from vibrating slowly in fixed position to sliding past each other.	1
	The ions change from very closely packed and orderly arranged to closely packed and disorderly arranged.	1

6		Total = 8
(a)(i)	Limestone (accept calcium carbonate)	1
(a)(ii)	To remove acidic impurities	1
(b)(i)	An alloy is a mixture of a metal and other element(s).	1
(b)(ii)	Stainless steel	1
(b)(iii)	The paint forms a barrier/ protective layer, preventing the reaction between iron and oxygen and water.	1
		1
(c)(i)	copper, iron, zinc	1
(c)(ii)	colourless	1