

CHAPTER 8: SALTS
BAB 8: GARAM

OBJECTIVES QUESTIONS
SOALAN OBJEKTIF

1) A	6) B	11) D	16) C	21) D
2) B	7) C	12) B	17) A	22) A
3) A	8) D	13) C	18) A	23) A
4) B	9) C	14) C	19) D	24) C
5) B	10) D	15) B	20) A	25) B
				26) B

No / Bil			Answer/Jawapan	Marks / Markah	
1	(a)	(i)	Copper (II) oxide <i>Kuprum(II) oksida</i>	1	5
		(ii)	Neutralisation <i>Peneutralan</i>	1	
		(iii)	2HCl + CuO → CuCl ₂ + H ₂ O Correct formula of reactant and product <i>Formula bahan tindak balas dan hasil tindak balas yang betul</i>	1	
			Balanced chemical equation <i>Persamaan kimia yang seimbang</i>	1	
	(iv)	To complete the reaction <i>Supaya tindak balas lengkap</i>	1		
	(b)	(i)	Double decomposition / Precipitation reaction <i>Tindak balas Penguraian Ganda Dua / Tindak balas pemendakan</i>	1	3
		(ii)	Ag ⁺ + Cl ⁻ → AgCl	1	
		(iii)	Filtration <i>Penurasan</i>	1	
	(c)	Cation : Cu ²⁺ <i>Kation: Cu²⁺</i> Anion : Cl ⁻ <i>Anion: Cl⁻</i>	1 1	2	
					10

No /Bil		Answer/Jawapan		Markah Marks	
2	(a)		Lead (II) oxide <i>Plumbum(II) oksida</i>	1	1
	(b)		White precipitate soluble in excess NaOH solution <i>Mendakan putih akan terbantuk dalam larutan NaOH berlebihan</i>	1	1
	(c)	(i)	White precipitate dissolves when heated White precipitate are formed when cool down <i>Mendakan putih larut apabila dipanaskan Mendakan putih terbentuk semula apabila sejuk</i>	1 1	2
		(ii)	Lead (II) chloride <i>Plumbum(II) klorida</i>	1	1
		(iii)	$Pb^{2+} + 2Cl^{-} \rightarrow PbCl_2$	1	1
		(iv)	Filter the mixture .The residue is lead (II) chloride. <i>Turaskan campuran. Baki adalah Plumbum(II) klorida</i>	1	1
	(d)	(i)	Lead(II) nitrate salt is heated <i>Plumbum(II) nitrat dipanaskan</i>	1	1
		(ii)	The colour of the residue : brown when hot yellow when cooled <i>Warna baki: perang apabila dipanaskan, kuning apabila disejukan</i>	1	1
			Brown gas is released <i>Gas perang dibebaskan</i>	1	2
			Total		11

No /Bil		Answer / Jawapan		Markah / Marks	
3	(a)		Zinc carbonate <i>Zink Karbonat</i>	1	1
	(b)	(i)	Hot – yellow <i>Panas-Kuning</i> Cold – white <i>Sejuk-putih</i>	1 1	3
		(ii)	The lime water turns chalky <i>Air kapur berubah menjadi keruh</i>	1	
	(c)	(i)	Neutralization <i>Peneutralan</i>	1	3
		(ii)	Colourless <i>Tidak berwarna</i>	1	
		(iii)	$ZnO + 2HNO_3 \rightarrow Zn(NO_3)_2 + H_2O$	1	
	(d)		Pour 2 cm ³ of the solution P into a test tube <i>Tuangkan 2 cm³ larutan P ke dalam tabung uji</i> Add , drop by drop ammonia solution into the solution until excess	1 1	3

		<p><i>Titiskan setitis demi setitis larutan ammonia ke dalam larutan itu sehingga berlebihan</i> <i>Stir the mixture</i> <i>Kacau campuran</i> <i>White precipitate formed and soluble in excess ammonia</i> <i>Mendakan putih terbentuk dan larut dalam ammonia berlebihan</i></p>	1	
				10

No / Bil		Answer / Jawapan	Marks Markah	
4	(a)	<p>Lead (II) oxide <i>Plumbum(II) oksida</i></p>	1	1
	(b)	<p>Brown when hot, yellow when cold <i>Perang apabila panas, kuning apabila sejuk</i></p>	1	1
	(c)	<p>$2\text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$ Correct formula of reactant and product <i>Formula bahan tindak balas dan hasil tindak balas yang betul</i> Balanced chemical equation <i>Persamaan kimia yang seimbang</i></p>	1 1	2
	(d)	<p>Lead (II) chloride <i>Plumbum(II) klorida</i></p>	1	1
	(e)	<p>Pour 2 cm^3 of the solution N into a test tube <i>Tuangkan 2 cm^3 larutan N ke dalam tabung uji</i> Add potassium iodide // Add sodium sulphate / chloride solution into the solution <i>Tambahkan larutan kalium iodida // Tambah natrium sulfat / klorida ke dalam larutan itu</i> Shake the mixture <i>Kacau campuran</i> Yellow precipitate // White precipitate formed <i>Mendakan kuning // Mendakan putih terbentuk</i></p>	1 1	2
	(f)	<p>Heat the solution and until saturated <i>Panaskan larutan dan sehingga tepu</i> Cool the saturated solution to filter out the salt crystals <i>Sejukkan larutan tepu tersebut untuk mengasingkan Kristal daripada larutan</i> Dry the salt crystals with filter paper. <i>Keringkan kristal garam dengan kertas turas</i></p>	1 1 1	3
				10

No / Bil		Answer / Jawapan	Markah Marks	
5	(a)	<p>Zinc sulphate / nitrate and sodium / potassium / ammonium carbonate // carbonic acid <i>Zink sulfat / nitrat dan natrium / kalium / ammonium karbonat //</i></p>	2	2

		<i>asid karbonik</i>		
(b)	(i)	Zinc oxide <i>Zink oksida</i>	1	3
	(ii)	1. Functional diagram / <i>Gambarajah berfungsi</i> 2. Label/ <i>Label</i> <div style="text-align: center;"> </div>	2	
(c)	(i)	$\text{ZnO} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2\text{O}$	2	5
	(ii)	Heat the solution and until saturated <i>Panaskan larutan dan sehingga tepu</i> Cool the saturated solution to filter out the salt crystals <i>Sejukkan larutan tepu tersebut untuk mengasingkan Kristal daripada larutan</i> Dry the salt crystals with filter paper. <i>Keringkan kristal garam dengan kertas turas</i>	3	
				10

No / Bil		Answer / Jawapan	Marks Markah	
6	(a)	(i) Lead(II) nitrate <i>Plumbum(II) nitrat</i>	1	2
		(ii) White <i>Putih</i>	1	
	(b)	To ensure all acid to be reacted completely <i>Untuk memastikan semua asid bertindak balas dengan lengkap</i>	1	1
	(c)	(i) $\text{PbO} + 2\text{HNO}_3 \rightarrow \text{Pb}(\text{NO}_3)_2 + \text{H}_2\text{O}$		

		Correct formula of reactant and product <i>Formula bahan tindak balas dan hasil tindak balas yang betul</i> Balanced chemical equation <i>Persamaan kimia yang seimbang</i>	1	1
	(ii)	Mole of $\text{HNO}_3 = 1 \times 50 \div 1000 // 0.05$ $2\text{mol HNO}_3 \rightarrow 1\text{mol Pb(NO}_3)_2 //$ $0.05\text{mol HNO}_3 \rightarrow 0.025\text{mol Pb(NO}_3)_2$ Mass of $\text{Pb(NO}_3)_2 = 0.025 \times 331 // 8.275\text{g}$	1 1	2
	(d)	-Pour 2 cm^3 of the salt solution into the test tube <i>-Tuangkan 2 cm^3 larutan garam dalam tabung uji</i> - 2 cm^3 of dilute sulphuric acid is added into the test tube followed by 2 cm^3 of iron(II) sulphate solution. The mixture is shaken well <i>-2 cm^3 asid sulfurik cair ditambah ke dalam tabung uji diikuti dengan 2 cm^3 larutan ferum(II) sulfat. Campuran digoncangkan</i> - Drop concentrated sulphuric acid slowly WHILE SLANTING the test tube. <i>-Titiskan asid sulfurik pekat dengan perlahan-lahan sambil mencondongkan tabung uji</i> - A brown ring is formed <i>-Cincin perang terbentuk</i>	1 1 1	3
				11

No / Bil		Answer / Jawapan	Marks Markah
7	(a)	Copper(II) nitrate <i>Kuprum(II) nitrat</i>	1
	(b)	Cu(OH)_2	1
	(c) (i)	Nitrogen dioxide <i>Gas nitrogen dioksida</i>	1
	(ii)	It relights a glowing wooden splinter. <i>Menyalakan kayu uji berbara</i>	1
	(iii)	Copper(II) oxide <i>Kuprum(II) oksida</i>	1
	(iv)	$2\text{Cu(NO}_3)_2(\text{s}) \rightarrow 2\text{CuO}(\text{s}) + 4\text{NO}_2(\text{g}) + \text{O}_2(\text{g})$	1
	(d)	<u>Mole of $\text{Cu(NO}_3)_2$ / mol $\text{Cu(NO}_3)_2$</u> $= \frac{18.8}{64 + 2(14) + 6(16)}$ $= 0.100\text{ mol}$ <u>Mole of gases / mol gas</u> mole of $\text{Cu(NO}_3)_2$ / mol $\text{Cu(NO}_3)_2$ $= \frac{5}{2}$	1

		<u>Mole of gases / mol gas</u> $= \frac{5 \times 0.1}{2}$ $= 0.250 \text{ mole.}$ <u>Volume of gases / isipadu gas</u> $= 0.250 \times 24 \text{ dm}^3$ $= 6.00 \text{ dm}^3$	1	
			1	
				9

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No /Bil		Answer/Jawapan	Marks Markah	
1	(a)	(i)		
		<u>Pb²⁺ ion / Ion Pb²⁺</u> 1. Pour 2 cm ³ of the solution into a test tube <i>Tuangkan 2 cm³ larutan N ke dalam tabung uji</i> 2. Add potassium iodide // Add sodium sulphate / chloride solution into the solution <i>Tambahkan larutan kalium iodida // Tambah natrium sulfat / klorida ke dalam larutan itu</i> 3. Shake the mixture <i>Goncangkan campuran</i> 4. Yellow precipitate // White precipitate formed <i>Mendakan kuning // Mendakan putih terbentuk</i> <u>NO₃⁻ ion / Ion NO₃⁻</u> 1. Pour 2 cm ³ of the salt solution into the test tube <i>Tuangkan 2 cm³ larutan garam dalam tabung uji</i> 2. 2 cm ³ of dilute sulphuric acid is added into the test tube followed by 2 cm ³ of iron(II) sulphate solution. The mixture is shaken well <i>2 cm³ asid sulfurik cair ditambah ke dalam tabung uji diikuti dengan 2 cm³ larutan ferum(II) sulfat. Campuran digoncangkan</i> 3. Drop concentrated sulphuric acid slowly while slanting the test tube <i>Titiskan asid sulfurik pekat dengan perlahan-lahan sambil mencondongkan tabung uji</i> 4. A brown ring is formed <i>Cincin perang terbentuk</i>	1 1 1 1 1 1	6
		(ii)		
		1. Solution X-sodium nitrate <i>Larutan X – natrium nitrat</i> 2. Solid Y –plumbum(II) nitrate <i>Pepejal Y – plumbum(II) karbonat</i> 3. Gas Z –carbon dioxide	1 1 1	3

			<i>Gas Z – karbon dioksida</i>		
	(b)	(i)	Correct formula of reactant and product <i>Formula bahan tindak balas dan hasil tindak balas yang betul</i> Balanced chemical equation <i>Persamaan kimia yang seimbang</i> $2\text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$ 1. Number of mole $\text{Pb}(\text{NO}_3)_2$ <i>Bilangan mol $\text{Pb}(\text{NO}_3)_2 = [0.5 \times 100]/1000 // 0.05$</i> 2. 2 mol of $\text{Pb}(\text{NO}_3)_2$ will produce 4 mol of NO_2 gas 0.05 mol $\text{Pb}(\text{NO}_3)_2$ will produce 0.1 mol gas NO_2 <i>2 mol $\text{Pb}(\text{NO}_3)_2$ akan menghasilkan 4 mole of NO_2 gas</i> <i>0.05 mol $\text{Pb}(\text{NO}_3)_2$ akan menghasilkan 0.1 mol nitrogen gas</i> 3. Volume of NO_2 gas = $0.1 \times 24 \text{ dm}^3 // 0.24 \text{ dm}^3$ <i>Isi padu gas $\text{NO}_2 = 0.1 \times 24 \text{ dm}^3 // 0.24 \text{ dm}^3$</i>	1 1 1 1 1	5
		(ii)	1. Insert a glowing wooden splinter near the mouth of test tube <i>Masukkan kayu uji berbara ke mulut tabung uji yang mengandungi gas</i> 2. Glowing wooden splinter lighted <i>Kayu uji berbara menyala</i>	1 1	2
		(iii)	1. Nitric acid <i>Asid nitrik</i> 2. Neutralisation reaction <i>Tindak balas peneutralan</i> 3. Correct formula of reactant and product <i>Formula bahan tindak balas dan hasil tindak balas yang betul</i> 4. Balanced chemical equation <i>Persamaan kimia yang seimbang</i> $2\text{PbO} + \text{HNO}_3 \rightarrow 2\text{Pb}(\text{NO}_3)_2 + \text{H}_2\text{O}$	1 1 1 1	4
					20
(2)	(a)	(i)	Blue solution X - copper (II) sulphate <i>Larutan biru X – kuprum(II) sulfat</i> Colourless solution Y - potassium carbonate // sodium carbonate // ammonium carbonate <i>Larutan tidak berwarna Y- kalium karbonat //natrium karbonat//ammonium karbonat</i>	1 1	2
		(ii)	Double Decomposition method <i>Tindak balas Penguraian Ganda Dua</i>	1	1
		(iii)	$\text{CuSO}_4 + \text{K}_2\text{CO}_3 \rightarrow \text{CuCO}_3 + \text{K}_2\text{SO}_4 //$ $\text{CuSO}_4 + \text{Na}_2\text{CO}_3 \rightarrow \text{CuCO}_3 + \text{Na}_2\text{SO}_4 //$ $\text{CuSO}_4 + (\text{NH}_4)_2\text{CO}_3 \rightarrow \text{CuCO}_3 + (\text{NH}_4)_2\text{SO}_4$ Correct formula of reactant and product	1	2

(b)		<p><u>Test for Cu²⁺</u> <u>Ujian untuk ion Cu²⁺</u> 1. Solid of copper(II) nitrate is dissolved <i>Pepejal kuprum(II) sulfat dilarutkan</i> 2. Add a few drops of sodium hydroxide solution until excess into a test tube. <i>Titiskan beberapa titis larutan natrium hidroksida sehingga berlebihan ke dalam tabung uji</i> 3. Blue precipitate is formed. <i>Mendakan biru terbentuk</i> 4. Insoluble in excess sodium hydroxide. <i>Tidak larut dalam larutan natrium hidroksida berlebihan</i></p>	<p>1 1 1 1</p>	4
		<p><u>Test for NO₃⁻</u> <u>Ujian untuk ion NO₃⁻</u> -Pour 2 cm³ of the salt solution into the test tube <i>-Tuangkan 2 cm³ larutan garam dalam tabung uji</i> - 2 cm³ of dilute sulphuric acid is added into the test tube followed by 2 cm³ of iron(II) sulphate solution. The mixture is shaken well <i>-2 cm³ asid sulfurik cair ditambah ke dalam tabung uji diikuti dengan 2 cm³ larutan ferum(II) sulfat. Campuran digoncangkan</i> - Drop concentrated sulphuric acid slowly while slanting the test tube <i>-Titiskan asid sulfurik pekat dengan perlahan-lahan sambil mencondongkan tabung uji.</i> - A brown ring is formed <i>-Cincin perang terbentuk</i></p>	<p>1 1 1 1</p>	4
				20

