

Bahagian A

Section A

[60 markah]

[60 marks]

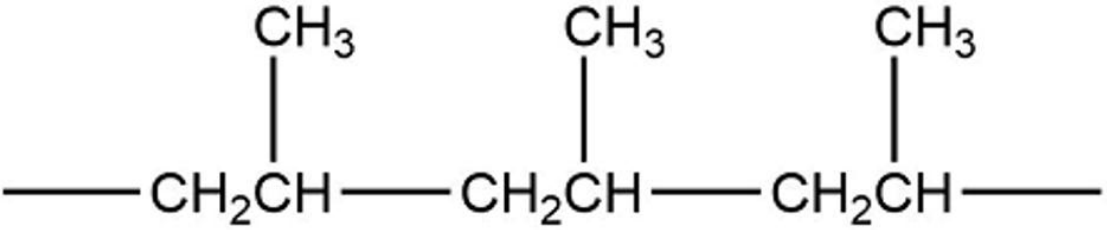
Jawab **semua** soalan dalam bahagian ini.

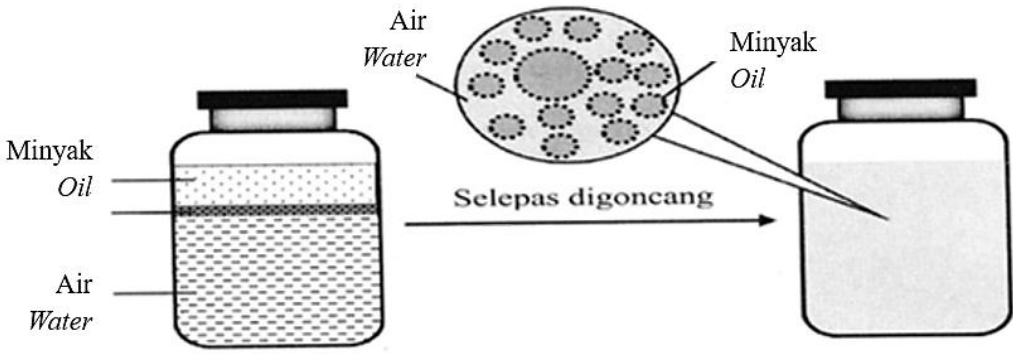
*Answer **all** questions in this section.*

1	Seorang murid menjalankan satu ujian bagi mengkaji sifat ammonia apabila dilarutkan dalam metilbenzena dan air dalam tabung uji berbeza seperti dalam Rajah 1. <i>A student carried out a test to study the properties of ammonia when dissolved in methylbenzene and water in separate test tubes, as shown in Diagram 1.</i> Rajah 1 / Diagram 1
(a)	Nyatakan maksud alkali. <i>State the meaning of alkali.</i> _____ [1 markah]/[1 mark]
(b)	Ramalkan pemerhatian terhadap warna kertas litmus merah dalam kedua-dua tabung uji. <i>Predict the observation of the red litmus paper color in both test tubes.</i> A: _____ B : _____ [2 markah]/[2 marks]

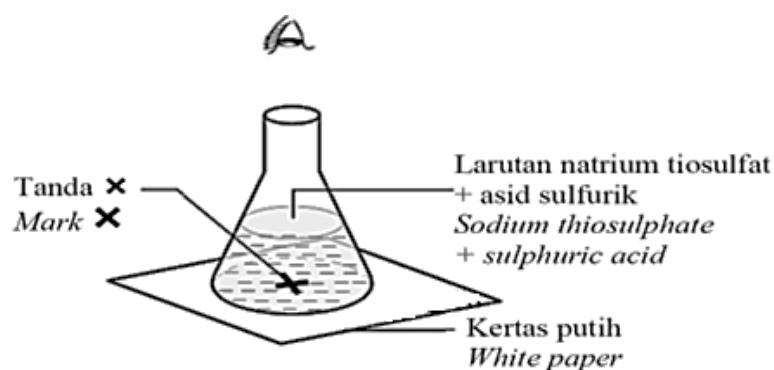
	(c) Berdasarkan jawapan anda di a(ii), terangkan pemerhatian Tabung Uji B. <i>Based on your answer in a(ii), explain the observation in Test Tube B.</i> [2 markah]/[2 marks]
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2	Bahan komposit digunakan secara meluas dalam pembangunan dan perkembangan teknologi pada masa kini. Rajah 2 menunjukkan sebuah empangan yang dibina di sebuah tasik. <i>Composite materials are widely used in the development and advancement of technology nowadays. Diagram 2 shows a dams built on a lake.</i>  Rajah 2/ Diagram 2
	(a) Apakah yang dimaksudkan dengan bahan komposit? <i>What is meant by a composite material?</i> [1 markah] [1 mark]
	(b) Nyatakan bahan matriks dan bahan pengukuh digunakan untuk membina empangan <i>State the matrix substance and the strengthening substance used to build dam.</i> [2 markah] [2 mark]
	(c) Terangkan mengapa bahan komposit sesuai untuk membina empangan. <i>Explain why composite suitable to build dam.</i> [2 markah] [2 mark]

4	Rajah 4.1 menunjukkan seahagian keratan polimer polipropena yang digunakan dalam pembungkus makanan. <i>Figure 4.1 shows a section of the polypropene polymer used in food packaging. .</i>  Rajah 4.1/ Diagram 4.1	
	(a)	Apakah maksud polimer? <i>What is the meaning of polymer?</i> _____ _____ [1 markah/ 1 mark]
	(b)	Berdasarkan Rajah 4.1 <i>Based on the diagram 4.1</i>
	(i)	Lukiskan formula struktur monomer bagi polimer di atas. <i>Draw the structural formula of the monomer for the above polymer</i> [1 markah/ 1 mark]
	(ii)	Namakan jenis tindak balas pempolimeran dalam penghasilan polimer di atas. <i>Name the type of polymerisation reaction involved in the formation of the above polymer.</i> _____ _____ _____ [1 markah/ 1 mark]
	(c)	Bahan Tambah X digunakan dalam penghasilan mayonis. Rajah 4

		menunjukkan tindak balas yang berlaku selepas bahan tambah x dimasukkan dalam campuran bahan asal mayonis. <i>Additive X is used in the production of mayonnaise. Figure 4 shows the reaction that occurs after additive X is added to the original mixture of mayonnaise ingredients.</i>  Rajah 4.2/ Diagram 4.2
	(i)	Apakah kelas bahan tambah makanan yang ditunjukkan dalam rajah 4.2? <i>What class of food additive is shown in Figure 4.2?</i> _____ [1 markah/ 1 mark]
	(ii)	Mengapakah bahan tambah makanan tersebut ditambahkan dalam penghasilan mayonis? <i>Why is this food additive added in the production of mayonnaise?</i> _____ [1 markah/ 1 mark]
	(iii)	Apakah kesan sampingan bahan tambah makanan yang berlebihan dalam penghasilan makanan? <i>What are the side effects of excessive use of food additives in food production?</i> _____ _____ [2 markah/ 2 marks]

- 5 Rajah 5.1 menunjukkan susunan radas bagi Eksperimen I dan Eksperimen II pada suhu yang berbeza untuk menentukan kadar tindak balas antara natrium tiosulfat dengan asid sulfurik.
Diagram 5.1 shows the apparatus set up for Experiment I and II at different temperatures to determine the rate of reaction between sodium thiosulphate with sulphuric acid.



Jadual 5.0 menunjukkan keputusan dua eksperimen itu.
Table 5.0 shows the result of the experiment.

Eksperimen <i>Experiment</i>	Bahan tindak balas <i>Reactants</i>	Masa untuk tanda "X" hilang dari penglihatan / s <i>Time taken for the mark "X" to disappear from sight / s</i>
I	50 cm³ larutan natrium tiosulfat 0.2 moldm⁻³ + asid sulfurik 1.0 mol dm⁻³ berlebihan pada 30°C <i>50 cm³ of 0.2 moldm⁻³ sodium thiosulphate solution + 1.0 mol dm⁻³ excess sulphuric acid at 30°C</i>	40
II	50 cm³ larutan natrium tiosulfat 0.2 mol dm⁻³ + asid sulfurik 1.0 mol dm⁻³ berlebihan pada 40°C <i>50 cm³ of 0.2 moldm⁻³ sodium thiosulphate solution + 1.0 mol dm⁻³ excess sulphuric acid at 40°C</i>	20

Jadual 5.0/ Table 5.0

- (a) Apakah maksud kadar tindak balas?
What is the meaning of rate of reaction?
-
-
- [1 markah/ 1 mark]
- (b) Nyatakan satu pemerhatian dalam eksperimen di atas
State an observation in the experiment above.
-
- [1 markah/ 1 mark]

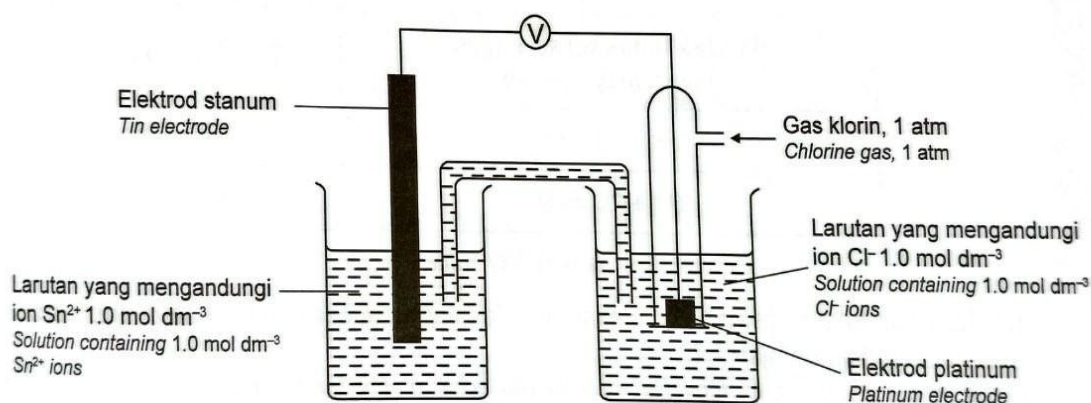
	(c)	(i)	Tuliskan persamaan kimia yang seimbang bagi tindak balas di atas. <i>Write the balanced chemical equation for the reaction above</i> [2 markah/ 2 marks]
		(ii)	Hitungkan kadar tindak balas bagi : <i>Calculate the average rate of reaction for:</i> Eksperimen I <i>Experiment I:</i> Eksperimen II <i>Experiment II:</i> [2 markah/ 2 marks]
	(d)		Bandingkan kadar tindak balas Eksperimen I dan Eksperimen II. Jelaskan jawapan anda <i>Compare the rate of reaction of Experiment I and Experiment II. Explain your answer.</i> [2 markah/ 2 marks]

6	Rajah 6.1 menunjukkan perwakilan piawai bagi dua isotop atom natrium. <i>Diagram 6.1 shows the standard representation of two isotopes of sodium atom.</i> ²³ 11 Na ²⁴ 11 Na Rajah 6.1 / Diagram 6.1		
	(a)	(i)	Nyatakan maksud isotop <i>State the meaning of isotopes.</i> _____ _____ [1 markah / 1 mark]
		(ii)	Tentukan bilangan proton bagi atom natrium-23. <i>Determine the number of protons of sodium-23 atom.</i> _____ [1 markah / 1 mark]

		(iii)	Lukis struktur atom bagi $^{24}_{11}\text{Na}$ <i>Draw the atomic structure of $^{24}_{11}\text{Na}$</i> [2 markah / 2 marks]
	(b)		Rajah 6.2 menunjukkan maklumat bagi dua isotop kuprum. <i>Diagram 6.2 shows the information for two isotopes of copper.</i> Kuprum-63 / <i>Copper-63</i> 63 29 Cu Kelimpahan semula jadi = 75.0% <i>Natural abundance</i> Kuprum-65 / <i>Copper-65</i> 65 29 Cu Kelimpahan semula jadi = 25.0% <i>Natural abundance</i> Rajah 6.2/ <i>Diagram 6.2</i>
		(i)	Hitungkan jisim atom relatif kuprum <i>Calculate the relative atomic mass of copper</i> [2 markah / 2 marks]
		(ii)	Bandingkan dan bezakan atom kuprum-63 dan atom kuprum-65. <i>Compare and contrast copper-63 atom and copper-65 atom.</i> [2 markah / 2 marks]
	(c)		Puan Maimunah didapati menghadapi penyakit kanser tulang. Apakah isotop yang mungkin digunakan untuk merawat Puan Maimunah. <i>Madam Maimunah was diagnosed with bone cancer. What isotope is used to treat Madam Maimunah?</i> [1 markah / 1 mark]

7

- a) Rajah 7.1 menunjukkan satu sel kimia.
Diagram 7.1 shows a chemical cell.



Rajah 7.1/Diagram 7.1

Jadual 7.1 menunjukkan nilai keupayaan elektrod piawai sel setengah bagi stanum dan klorin
Table 7.1 shows the standard electrode potential values of half-cells for tin and chlorine.

Persamaan setengah Half-cell equation	E° / V (298K)
$\text{Sn}^{2+}(\text{ak/aq}) + 2e \rightarrow \text{Sn}(\text{p/s})$	-0.14
$\text{Cl}_2(\text{g}) + 2e \rightarrow 2\text{Cl}^-(\text{ak/aq})$	+1.36

Jadual 7.1/Table 7.1

Berdasarkan rajah dan jadual ,
Based on diagram and table,

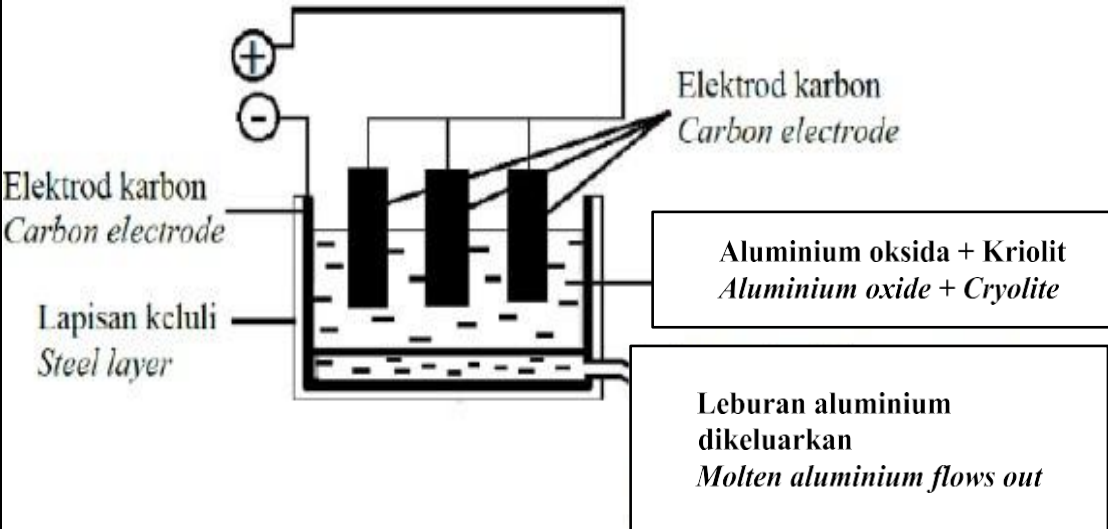
- (i) Nyatakan warna gas klorin
State the colour of chlorine gas

[1 markah/ 1 mark]

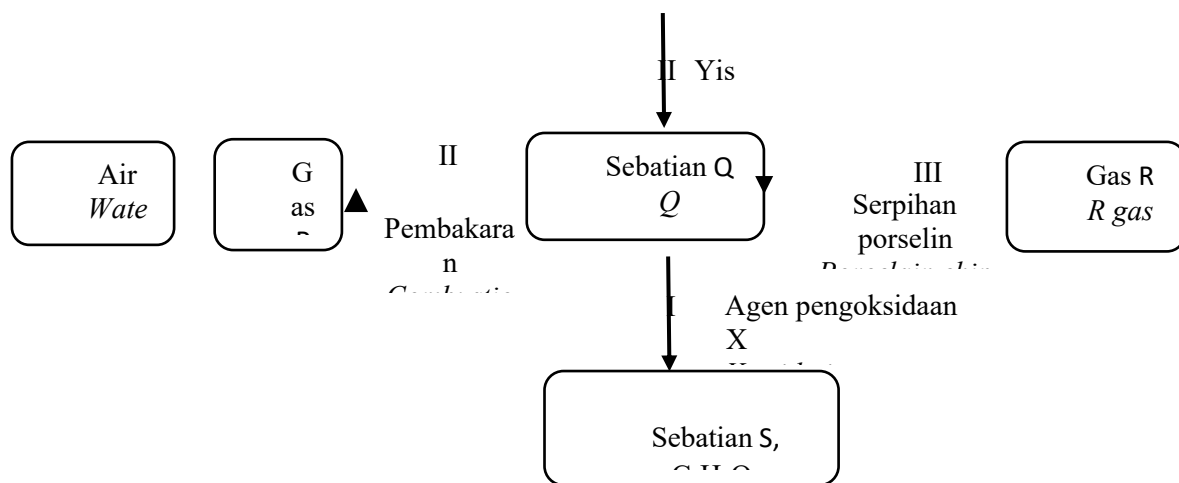
- (ii) Kenal pasti terminal negatif dan positif.
Identify negative and positive terminal.

Terminal positif/positive terminal : _____
[1 markah/ 1 mark]

		(iii)	Tuliskan notasi sel bagi sel kimia itu. <i>Write the cell notation for the chemical cell.</i>
			[1 markah/1 mark]
		(iv)	Hitungkan nilai E° bagi sel kimia itu. Calculate the value of the E° for the chemical cell.
			[2 markah/2 marks]
	b)		Jadual 7.2 menunjukkan nilai E° bagi beberapa sel setengah. Table 7.2 shows the E° value of a few half cells. Jadual 7.2/ Table 7.2 Berdasarkan nilai E° terangkan adakah tindak balas akan berlaku bagi bahan tindak balas yang ditunjukkan dalam Rajah 7.2 Based on the value of E° explain if a reaction will occur or not for the following reactants as shown in Diagram 7.2 The diagram shows a test tube partially filled with a liquid. A wavy metal strip is submerged in the liquid. Labels with leader lines point to the liquid and the metal strip. Rajah 7.2/ Diagram 7.2

			[3 markah/ 3 marks]	
	c)	 Rajah 7.3 / Diagram 7.3 Rajah 7.3 menunjukkan kaedah yang digunakan untuk mengekstrak aluminium untuk pembuatan Wajarkan penggunaan kaedah tersebut dalam industri. <i>Diagram 7.3 show a method to extract aluminium for manufacturing aluminium cans as in diagram above. Justify the usage of the method industries.</i>		
			[2 markah/ 2 marks]	

8	Rajah 8 menunjukkan siri tindak balas melibatkan sebatian Q. Diagram 8 shows a series of reactions involving compound Q. Glukosa
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Rajah 8/ Diagram 8

Berdasarkan rajah 8,
Based on diagram 8,

- (a) Namakan tindak balas II
Name reaction II.

[1 markah/ 1 mark]

- (b) (i) Nyatakan formula kimia bagi bahan Q
State the chemical formula for substance Q.

[1 markah/ 1 mark]

- (ii) Tuliskan persamaan kimia yang seimbang bagi tindak balas II.
Write the balanced chemical equation for reaction II.

[2 markah/ 2 marks]

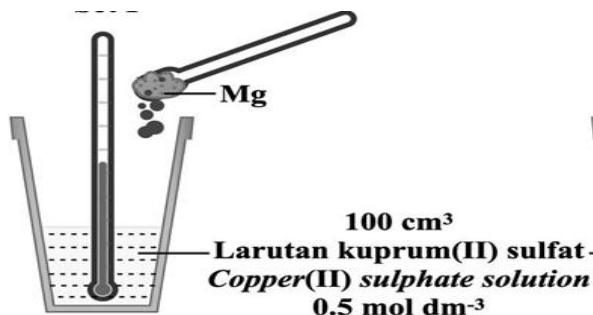
- (iii) 0.2 mol sebatian Q mengalami pembakaran lengkap pada suhu bilik. Hitungkan isi padu gas P yang terbebas.
[1 mol gas menempati isi padu 24 dm³ pada keadaan bilik.
Jisim atom relatif: H = 1; C = 12]
0.2 mol of compound Q undergoes complete combustion at room temperature. Calculate the volume of gas P liberated.
[1 mol of gas occupies a volume of 24 dm³ at room temperature. Relative atomic mass: H = 1; C = 12]

			[2 markah/ 2 marks]
	(c)	Lukis formula struktur sebatian S <i>Draw the structural formula of compound S.</i> [1 markah/ 1 mark]	
	(d)	Huraikan ujian kehadiran gas R yang terbentuk daripada tindak balas kimia III <i>Describe the test for the presence of gas R formed from chemical reaction III.</i> [2 markah/ 2 marks]	
	(e)	Penggunaan Sebatian Q sebagai bahan api memberikan banyak kebaikan terutamanya dalam mengurangkan kesan rumah hijau. Wajarkan pernyataan diatas. <i>The use of Compound Q as a fuel provides many benefits, especially in reducing greenhouse gas emissions.</i> <i>Justify the statement above.</i> [1 markah/ 1 mark]	

Bahagian B
Section B
[20 markah] [20 marks]

Jawab mana-mana **satu** soalan daripada bahagian ini.

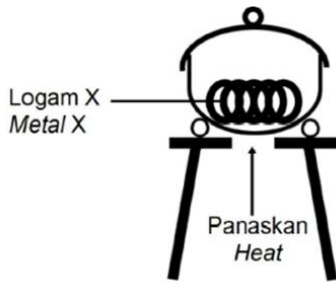
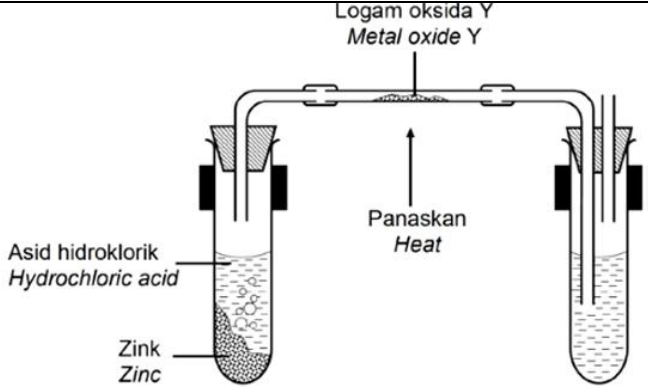
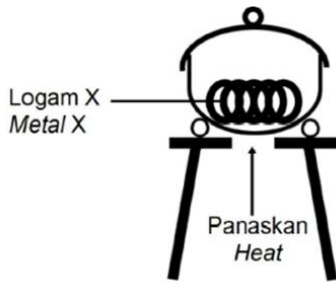
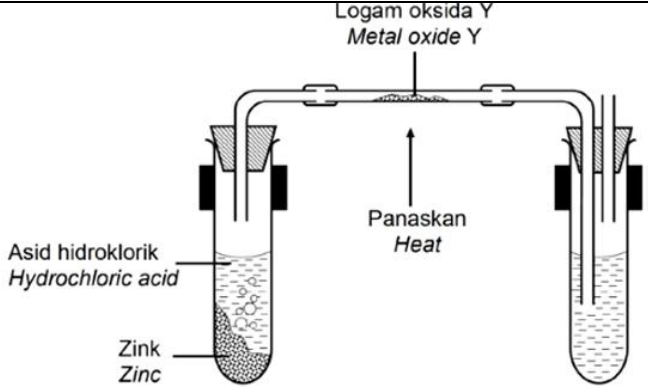
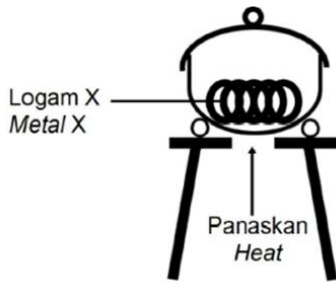
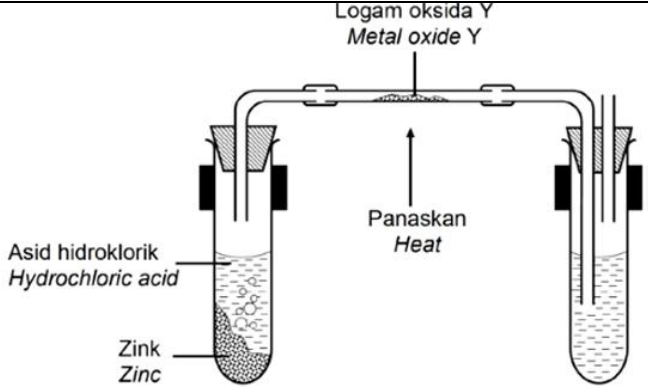
Answer any one question in this section.

9	(a)	Rajah 9.1 menunjukkan susunan radas bagi membandingkan haba penyesaran kuprum daripada larutan kuprum (II) sulfat oleh serbuk magnesium, Mg dengan menggunakan cawan polisterin. Diagram 9.1 shows the apparatus set up to compare the heat of displacement of copper from copper (II) sulphate solution by magnesium powder, Mg, by using polystyrene cups.  Jadual 9.1 menunjukkan keputusan eksperimen. Table 9.1 shows the result of experiment. <table><tr><th>Suhu (°C) Temperature (°C)</th><th>Set I</th></tr><tr><td>Awal, θ_i Initial, θ_i</td><td>27.0</td></tr><tr><td>Tertinggi, θ_f Highest, θ_f</td><td>32.0</td></tr></table>	Suhu (°C) Temperature (°C)	Set I	Awal, θ_i Initial, θ_i	27.0	Tertinggi, θ_f Highest, θ_f	32.0
Suhu (°C) Temperature (°C)	Set I							
Awal, θ_i Initial, θ_i	27.0							
Tertinggi, θ_f Highest, θ_f	32.0							
	(i)	Nyatakan maksud haba penyesaran. State the meaning of heat of displacement. [1 markah/ 1 mark]						
	(ii)	Selain daripada perubahan suhu, nyatakan satu pemerhatian lain bagi eksperimen. Apart from the temperature change, state other observations for the experiment. [1 markah/ 1 mark]						
	(iii)	Mengapa cawan polisterin digunakan dalam eksperimen ini Why polystyrene cups were used in this experiment. [1 markah/ 1 mark]						
	(iv)	Berdasarkan Jadual 9.1: Based on Table 9.1 : Hitung haba penyesaran bagi tindak balas antara larutan kuprum (II) sulfat dengan magnesium [Diberi muatan haba tentu bagi larutan ialah $c = 4.2 \text{ J g}^{-1}\text{ }^{\circ}\text{C}^{-1}$, ketumpatan larutan = 1 g cm^{-3}] Calculate the heat of displacement of the reaction between copper (II) sulphate solution and magnesium. [Given that the heat capacity of solution is $c = 4.2 \text{ J g}^{-1}\text{ }^{\circ}\text{C}^{-1}$, density of solution = 1 g cm^{-3}] [3 markah/ 3 marks]						
	(v)	Tuliskan persamaan kimia yang seimbang bagi tindak balas dalam eksperimen. Write a balanced chemical equation for the reaction in experiment. [2 markah/ 2 marks]						

		(vi)	Lukiskan gambarajah aras tenaga bagi tindak balas. <i>Draw the energy level diagram for the reaction.</i> [2 markah/ 2 marks]									
		(vii)	Ramalkan haba penyesaran jika eksperimen diulangi dengan menggunakan zink untuk menggantikan magnesium. Jelaskan jawapan kamu. <i>Predict the heat of displacement if experiment is carried out using zinc to replace magnesium. Explain your answer.</i> [2 markah/ 2 marks]									
(b)	Rajah 9.2 menunjukkan bahan A dan bahan B digunakan dalam kehidupan seharian. Pek panas digunakan pada bahagian yang cedera secara terapi fizikal dan pek sejuk boleh digunakan untuk tahan sakit dan bengkak. Diagram 9.2 shows the substance A and substance B are used in daily life. Hot pack applied to your injured part by your physical therapist and cold pack can be used to relieve pain and swelling. <table><tr><td></td><td></td></tr><tr><td>Bahan A/ Substance A</td><td>Bahan B/ Substance B</td></tr></table> Rajah 9.2/ Diagram 9.2 Based on diagram 9.2, compare the reaction occur in substance A and substance B in terms of <i>Berdasarkan rajah 9.2, banding tindak balas yang berlaku dalam bahan A dan bahan B dari segi</i> - Type of reaction / <i>Jenis tindak balas</i> - Temperature change / <i>Perubahan suhu</i> - Change in the total energy content of reactant and total energy content of product <i>Perubahan jumlah kandungan tenaga bahan tindak balas dan jumlah kandungan tenaga hasil tindak balas</i> - Formation and breaking bond / <i>Pembentukan dan pemecahan ikatan</i> [4 markah/ 4 marks]					Bahan A/ Substance A	Bahan B/ Substance B					
												
Bahan A/ Substance A	Bahan B/ Substance B											
	Jadual 9.2 menunjukkan haba peneutralan bagi dua set eksperimen yang menggunakan asid monoprotik yang berlainan, X dan Y yang bertindak balas dengan larutan kalium hidroksida. <i>Table 9.2 shows the heat of neutralisation for two sets of experiment using different monoprotic acids, X and Y reacting with potassium hydroxide solution.</i> <table><tr><th>Set Set</th><th>Bahan tindak balas <i>Reactant</i></th><th>Haba peneutralan (kJmol^{-1}) <i>Heat of neutralization (kJmol^{-1})</i></th></tr><tr><td>I</td><td>Asid X + larutan natrium hidroksida <i>Acid X + sodium hydroxide solution</i></td><td>-55</td></tr><tr><td>II</td><td>Asid Y + larutan natrium hidroksida <i>Acid Y + sodium hydroxide solution</i></td><td>-57</td></tr></table> Jadual 9.2/ Table 9.2			Set Set	Bahan tindak balas <i>Reactant</i>	Haba peneutralan (kJmol^{-1}) <i>Heat of neutralization (kJmol^{-1})</i>	I	Asid X + larutan natrium hidroksida <i>Acid X + sodium hydroxide solution</i>	-55	II	Asid Y + larutan natrium hidroksida <i>Acid Y + sodium hydroxide solution</i>	-57
Set Set	Bahan tindak balas <i>Reactant</i>	Haba peneutralan (kJmol^{-1}) <i>Heat of neutralization (kJmol^{-1})</i>										
I	Asid X + larutan natrium hidroksida <i>Acid X + sodium hydroxide solution</i>	-55										
II	Asid Y + larutan natrium hidroksida <i>Acid Y + sodium hydroxide solution</i>	-57										

		Berdasarkan jadual di atas, cadangkan asid X. Jelaskan mengapa nilai haba peneutralan bagi Set I lebih rendah daripada set II. <i>Based on the table above, suggest acid X. Explain why the heat of neutralization for Set I is rendah than Set II.</i> [4 markah/ 4 marks]
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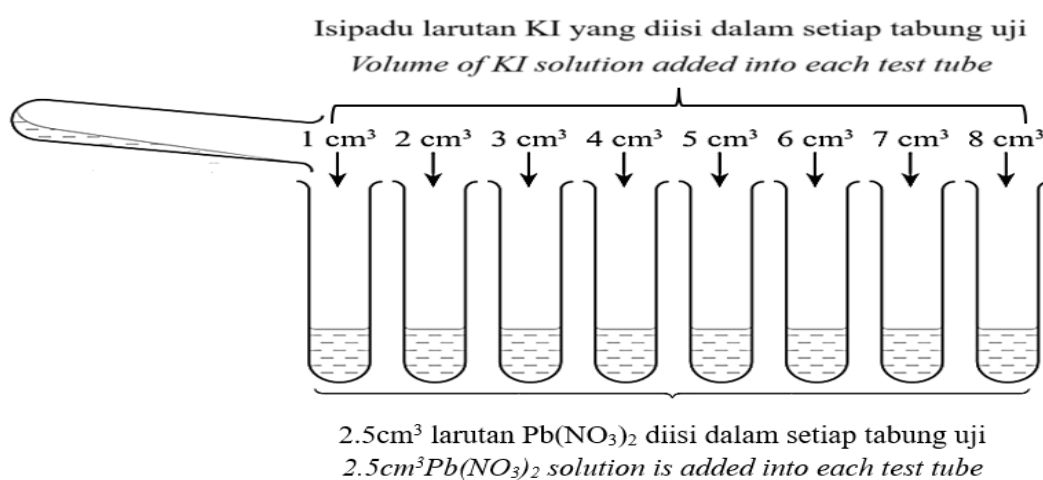
10	(a)	Persamaan kimia tidak seimbang di bawah menunjukkan tindak balas antara aluminium dan zink oksida. <i>Unbalance chemical equation below shows the reaction between aluminium and zinc oxide.</i> $\begin{array}{ccccccc} \text{Al (p)} & + & \text{ZnO (p)} & \rightarrow & \text{Zn (p)} & + & \text{Al}_2\text{O}_3 \text{ (p)} \\ \text{Al (s)} & + & \text{ZnO (s)} & \rightarrow & \text{Zn (s)} & + & \text{Al}_2\text{O}_3 \text{ (s)} \end{array}$
	(i)	Tuliskan persamaan kimia yang seimbang bagi tindak balas di atas. Nyatakan satu maklumat secara kualitatif atau kuantitatif yang dapat diperolehi daripada persamaan kimia yang seimbang tersebut. <i>Write the balanced chemical equation for the reaction above. State one information qualitatively or quantitatively that can be obtained from the balanced chemical equation.</i> [2 markah/ 2 marks]
	(ii)	Hitung jisim zink yang terbentuk apabila 2.7 g logam aluminium bertindak balas dengan zink oksida berlebihan. <i>Calculate the mass of zinc formed when 2.7 g of aluminium metal is react with excess zinc oxide</i> [Jisim atom relatif: Al = 27; Zn = 65] [Relative atomic mass: Al = 27 ; Zn = 65] [3 markah / 3 marks]
	(b)	Rajah 10.1 menunjukkan maklumat bagi sebatian M. <i>Diagram 10.1 shows the information of compound M.</i> <u>Sebatian /Compound M</u> 4.8 g Karbon / Carbon 1.6 g Oksigen / Oxygen 1.0 g Hidrogen / Hydrogen Jisim molekul relatif = 74 Relative molecular mass = 74 Rajah 10.1 / Diagram 10.1
	(i)	Hitungkan <i>Calculate</i> • formula empirik dan <i>the empirical formula and</i> • formula molekul <i>the molecular formula</i>

		bagi sebatian M. of compound M.	[5 markah/ 5 marks]				
	(ii)	Sebatian M dan butena, C ₄ H ₈ boleh digunakan sebagai bahan api. Sebagai seorang pencinta alam yang sentiasa berusaha untuk mengurangkan jejak karbon anda perlu memilih antara sebatian M dan butena, C ₄ H ₈ bahan api manakah yang sesuai untuk digunakan dalam kehidupan. Wajarkan pilihan anda. Compound M and butene, C ₄ H ₈ can be used as fuel. As an environmentalist who is always trying to reduce the carbon footprint, you need to choose between compound M and butene, C ₄ H ₈ , which fuel is suitable for use in life. Justify your choice.	[4 markah/ 4 marks]				
(c)	Rajah 10.2 menunjukkan susunan radas bagi dua kaedah yang digunakan untuk menentukan formula empirik bagi dua sebatian. Diagram 10.2 shows the arrangement of apparatus for two methods used to determine the empirical formula of two compounds.						
	<table><tr><th>Kaedah I Method I</th><th>Kaedah II Method II</th></tr><tr><td></td><td></td></tr></table> Rajah 10.2 / Diagram 10.2			Kaedah I Method I	Kaedah II Method II		
Kaedah I Method I	Kaedah II Method II						
							
	(i)	Nyatakan maksud formula molekul. What is meant by molecular formula?	[1 markah/ 1 mark]				
	(ii)	Cadangkan logam X dan oksida logam Y. Terangkan mengapa logam itu dipilih. Suggest metal X and Y metal oxide. Explain why the metal was chosen.	[4 markah/ 4 marks]				
	(iii)	Kaedah yang manakah sesuai digunakan untuk menentukan formula empirik plumbum oksida? Which method is appropriate to use to determine the empirical formula of lead oxide?	[1 markah/ 1 mark]				

Bahagian C
Section C
[20 markah/20 marks]

Jawab **semua** soalan dalam bahagian ini.
Answer all questions in this section.

- 11 (a) Rajah 11.1 menunjukkan isipadu larutan kalium iodida 0.5 mol dm^{-3} yang berlainan disikan ke dalam 8 tabung uji masing-masing mengandungi 2.5 cm^3 larutan plumbum (II) nitrat 0.5 mol dm^{-3} . Diagram 11.1 shows the observation obtained when 0.5 mol dm^{-3} lead (II) nitrate is added with 0.5 mol dm^{-3} potassium iodide, KI solution. The experiment is repeated for six more times with varying volume of potassium chromate (VI) solution



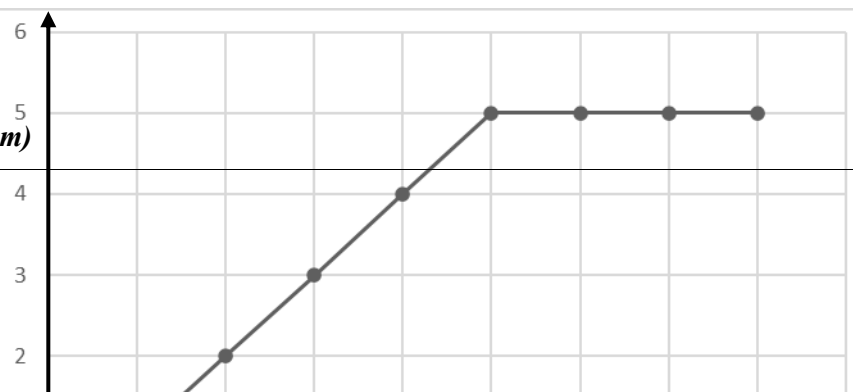
Rajah 11.1/ Diagram 11.1

Graf di bawah menunjukkan ketinggian mendakan melawan isipadu larutan kalium iodida yang telah dimasukkan.

Graph below show the height of precipitate against volume of potassium iodide solution that added.

Ketinggian mendakan (cm)

Height of precipitate (cm)



		Isipadu larutan kalium iodida Volume of potassium iodide solution(cm^3) Berdasarkan maklumat di atas. <i>Based on the information above.</i>
	(i)	Nyatakan jenis tindak balas yang berlaku antara larutan plumbum (II) nitrat dengan larutan kalium iodida. <i>State the type of reaction between lead (II) nitrate solution and potassium iodide solution.</i> [1 markah/ 1 marks]
	(ii)	Berdasarkan graf, nyatakan isipadu larutan kalium iodida yang diperlukan untuk bertindak balas sepenuhnya dengan larutan plumbum (II) nitrat 0.5 mol dm^{-3}. <i>Based on the graph, state the volume of potassium iodide solution needed to completely react with 0.5 mol dm^{-3} lead (II) nitrate solution.</i> [1 markah/ 1 mark]
	(iii)	Hitungkan bilangan mol bagi: <i>Calculate the number of moles of:</i> Larutan kalium iodida berdasarkan isipadu dalam (b) (ii) <i>Potassium iodide solution based on volume in (b) (ii).</i> Larutan plumbum (II) nitrat yang digunakan dalam eksperimen ini <i>Lead (II) nitrate solution used in the experiment.</i> [2 markah/ 2 marks]
	(iv)	Tentukan bilangan mol iodida, I^- yang bertindak balas lengkap dengan 1 mol ion plumbum(II), Pb^{2+}. <i>Determine the number of moles of iodide ion, I^- that reacts completely with 1 mol of lead(II) ion, Pb^{2+}.</i> [1 markah/ 1 mark]
	(v)	Bina persamaan ion bagi pembentukan mendakan dalam eksperimen ini. <i>Construct the ionic equation for the formation of the precipitate formed in this experiment.</i> [2 markah/ 2 marks]
(b)		Rajah 11.2 menunjukkan eksperimen pemanasan kuprum (II) karbonat dan kuprum (II) nitrat. <i>Diagram 11.2 shows the experiment for the heating of copper (II) carbonate and copper (II) nitrate.</i>

Eksperimen I /Experiment I	Eksperimen II /Experiment II

Rajah 11.2/ Diagram 11.2

Kedua- dua garam kuprum (II) karbonat dan kuprum (II) nitrat terurai apabila dipanaskan. Banding dan bezakan pemerhatian dan hasil tindak balas bagi kedua- dua eksperimen dalam Rajah 11.2

Both copper (II) carbonate and copper (II) nitrate decomposed when heated. Compare and contrast the observation and product for the both experiment in Diagram 11.2

[4 markah/ 4 marks]

- (c) Rajah 11.3 menunjukkan cangkerang. Cangkerang terbina daripada sejenis garam.
Diagram 11.3 shows a shell. Shells are made from the type of salt.



Rajah 11.3 / Diagram 11.3

Ali memecahkan cangkerang ini kepada kepingan kecil. Kemudian dia memasukkan kepingan cangkerang yang kecil ini ke dalam tabung uji dan menambahkan 50 cm³ asid hidroklorik 1.0 mol dm⁻³. Gas T terbebas dan suatu larutan tidak berwarna terhasil

Ali crashes the shells into small pieces. Then, she put the pieces of shells into a test tube and 50 cm³ of 1.0 mol dm⁻³ hydrochloric acid is added. Gas T is released and a colourless solution is produced

- | | |
|------|--|
| (i) | <p>Nyatakan nama gas T dan larutan tidak berwarna yang terhasil.
<i>State the name of gas T and the colourless solution produced.</i></p> <p>[2 markah/ 2 marks]</p> |
| (ii) | <p>Sebagai seorang ahli kimia, cadangkan satu bahan kimia yang boleh ditambah kepada larutan tidak berwarna di (c)(i) untuk menghasilkan semula pepejal garam yang wujud di dalam cangkerang.
Huraikan eksperimen bagaimana kamu dapat menyediakan pepejal garam yang wujud di dalam cangkerang dengan menggunakan bahan kimia yang kamu cadangkan dan larutan tidak berwarna di (c)(i).
Tuliskan persamaan kimia seimbang bagi tindak balas yang berlaku.</p> |

		<i>As a chemist, suggest a chemical that can be added to the colorless solution in (c)(i) to regenerate the salt solid that exists in the shell.</i> <i>Describe the experiment on how you can prepare the salt solid that exists in the shell using the chemical you suggested and the colorless solution in (c)(i).</i> <i>Write the balanced chemical equation for the reaction that occurs.</i> [7 markah/ 7 marks]
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