

Answer **all** questions.
Jawab **semua** soalan.

1. Diagram 1 shows an experiment to determine the heat of combustion of alcohol in lab. Methanol, CH_3OH is burnt in a spirit lamp and the heat released is absorbed into 200 cm^3 of distilled water in a copper container. The alcohol is burnt until the temperature of distilled water increased by 30°C . The weight of spirit lamp is recorded, and the experiment is repeat by using ethanol, propanol and butanol.

Rajah 1 menunjukkan satu eksperimen untuk menentukan haba pembakaran alkohol di dalam makmal. Metanol, CH_3OH di bakar dalam lampu pelita dan haba yang di bebaskan di serap ke dalam 200 cm^3 air suling di dalam bekas kuprum. Alkohol itu di bakar sehingga suhu air suling meningkat sebanyak 30°C . Jisim lampu pelita dicatatkan, dan eksperimen diulangi dengan menggunakan etanol, propanol dan butanol.

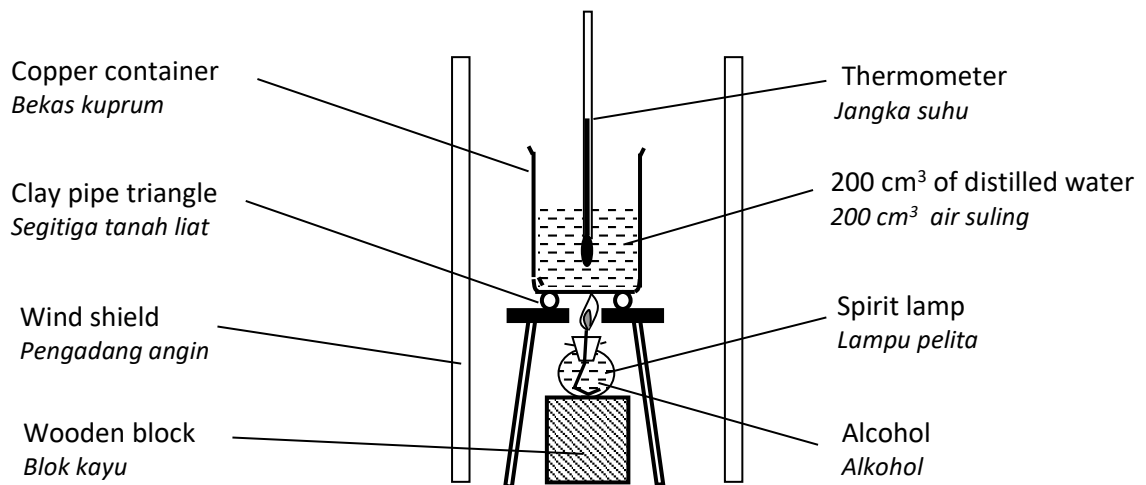


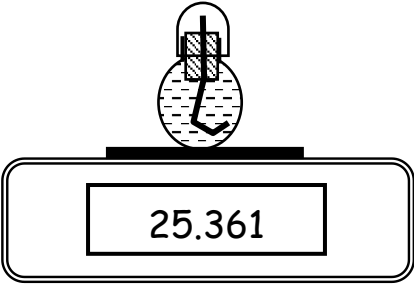
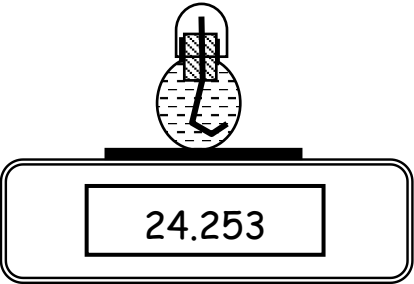
Diagram 1
Rajah 1

The reading during the experiment is shown in Diagram 2 below.
Bacaan suhu semasa eksperimen ditunjukkan dalam Rajah 2 di bawah.

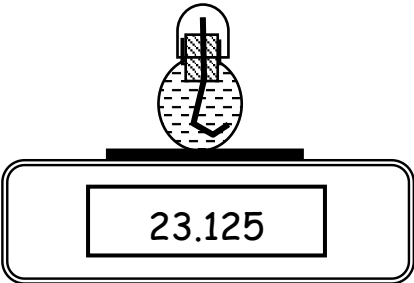
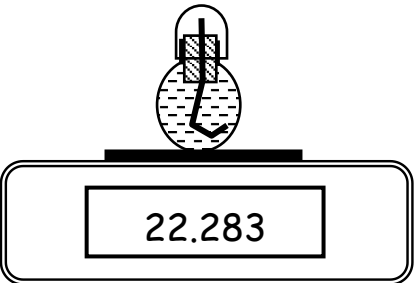
- (a) Record the reading of the mass of spirit lamp in the spaces provided in Diagram 2 in two decimal places.
Catatkan bacaan jisim lampu pelita pada ruangan yang disediakan dalam Rajah 2 dalam dua titik perpuluhan.

[3 marks / 3 markah]

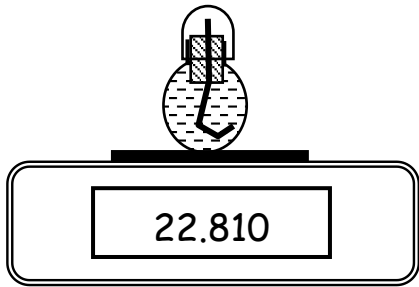
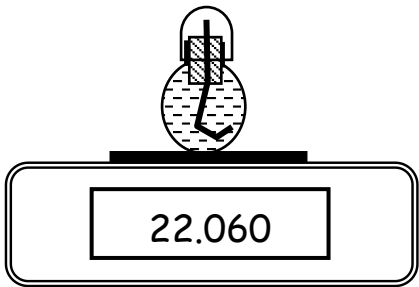
- (i) Methanol, CH_3OH
Metanol, CH_3OH

Weight Berat	Initial reading Bacaan awal	Final reading Bacaan akhir
Electronic balance diagram <i>Rajah neraca elektronik</i>		
Reading Bacaan	Initial weight / g Berat awal / g 	Final weight / g Berat akhir / g

- (ii) Ethanol, $\text{C}_2\text{H}_5\text{OH}$
Etanol, $\text{C}_2\text{H}_5\text{OH}$

Weight Berat	Initial reading Bacaan awal	Final reading Bacaan akhir
Electronic balance diagram <i>Rajah neraca elektronik</i>		
Reading Bacaan	Initial weight / g Berat awal / g 	Final weight / g Berat akhir / g

- (iii) Propanol, C_3H_7OH
 Propanol, C_3H_7OH

Weight <i>Berat</i>	Initial reading <i>Bacaan awal</i>	Final reading <i>Bacaan akhir</i>
Electronic balance diagram <i>Rajah neraca elektronik</i>		
Reading <i>Bacaan</i>	Initial weight / g <i>Berat awal / g</i>	Final weight / g <i>Berat akhir / g</i>

- (iv) Butanol, C_4H_9OH
 Butanol, C_4H_9OH

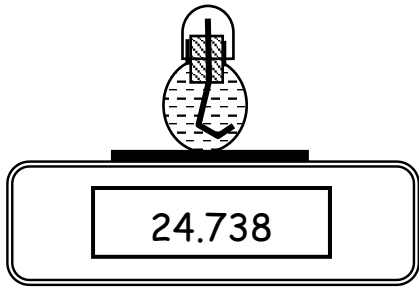
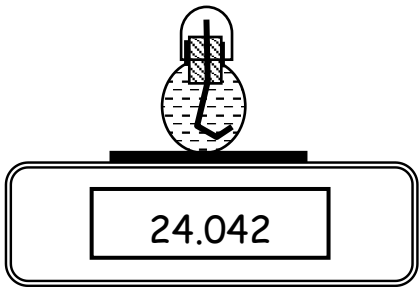
Weight <i>Berat</i>	Initial reading <i>Bacaan awal</i>	Final reading <i>Bacaan akhir</i>
Electronic balance diagram <i>Rajah neraca elektronik</i>		
Reading <i>Bacaan</i>	Initial weight / g <i>Berat awal / g</i>	Final weight / g <i>Berat akhir / g</i>

Diagram 2
Rajah 2

- (b) Construct a table to record the initial, the final mass and the mass of alcohol burnt for this experiment.

Bina satu jadual dengan merekodkan jisim awal, akhir dan jisim alkohol yang dibakar di dalam eksperimen ini.

[3 marks / 3 markah]

- (c) For this experiment, state
Untuk eksperimen ini, nyatakan

(i) Manipulated variable
Pembolehubah dimanipulasi

.....
(ii) Responding variable
Pembolehubah bergerak balas

.....
(iii) Fixed variables
Pembolehubah dimalarkan

.....
[3 marks / 3 markah]

- (d) State the hypothesis for this experiment.
Nyatakan satu hipotesis bagi eksperimen ini.

.....
.....
.....

[3 marks / 3 markah]

- (e) Calculate the heat of combustion for methanol in this experiment.
Kira haba pembakaran metanol untuk eksperimen ini.
 [Specific heat capacity / Muatan haba tentu = $4.2 \text{ J g}^{-1} \text{ }^{\circ}\text{C}^{-1}$]

[3 marks / 3 markah]

- (f) Given the heat of combustion of alcohols as Table 1 below.
Diberi haba pembakaran alkohol seperti dalam Jadual 1 di bawah.

Alcohol <i>Alkohol</i>	Heat of combustion / $\text{kJ g}^{-1} \text{ }^{\circ}\text{C}^{-1}$ <i>Haba pembakaran / $\text{kJ g}^{-1} \text{ }^{\circ}\text{C}^{-1}$</i>
Methanol, CH_3OH <i>Metanol, CH_3OH</i>	
Ethanol, $\text{C}_2\text{H}_5\text{OH}$ <i>Etanol, $\text{C}_2\text{H}_5\text{OH}$</i>	- 1376
Propanol, $\text{C}_3\text{H}_7\text{OH}$	- 2017
Butanol, $\text{C}_4\text{H}_9\text{OH}$	- 2679
Pentanol, $\text{C}_5\text{H}_{11}\text{OH}$	- m

Table 1
Jadual 1

Predict the heat of combustion of pentanol from Table 1.
Ramalkan haba pembakaran pentanol dari Jadual 1.

.....
 [3 marks / 3 markah]

- (g) State the relationship between the number of carbon atom per molecule with the mass of alcohols burnt.
Nyatakan hubungan antara bilangan karbon per molekul dengan jisim alkohol dibakar.

.....

.....

[3 marks / 3 markah]

2. Two experiment was carried out to investigate the effect of metal in contact with iron on the rusting of iron. The irons are coiled with metal copper and tin and kept inside a jelly solution which contains a small amount phenolphthalein and potassium hexacyanoferrate(III) solution. The test tubes are put aside for 5 days and the observations are recorded.

Dua eksperimen telah dijalankan untuk mengkaji kesan logam yang bersentuhan dengan besi terhadap pengurangan besi. Besi yang dililitkan dengan logam kuprum dan timah disimpan di dalam larutan jeli yang mengandungi sedikit fenolftalein dan larutan kalium heksasianoferrat(III). Tabung uji disimpan selama 5 hari dan pemerhatian direkodkan.

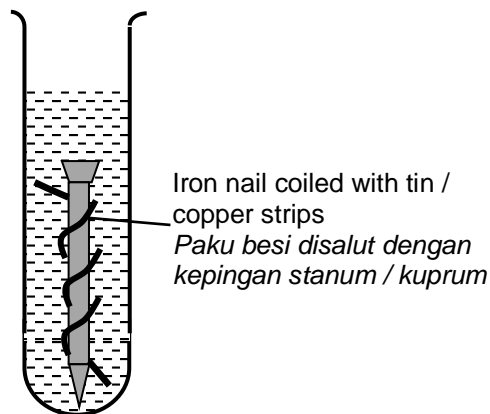
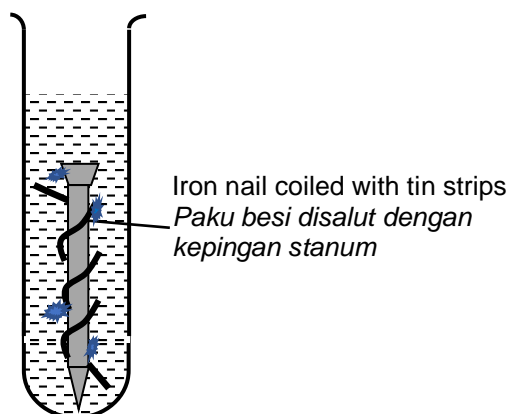


Diagram 3
Rajah 3

Diagram 4 below shows the result after 5 days.
Rajah 4 di bawah menunjukkan keputusan selepas 5 hari.

- (i) Experiment I : With tin strips.
Eksperimen I : Dengan kepingan stanum.



- (ii) Experiment II : With copper strips.
Eksperimen II : Dengan kepingan kuprum.

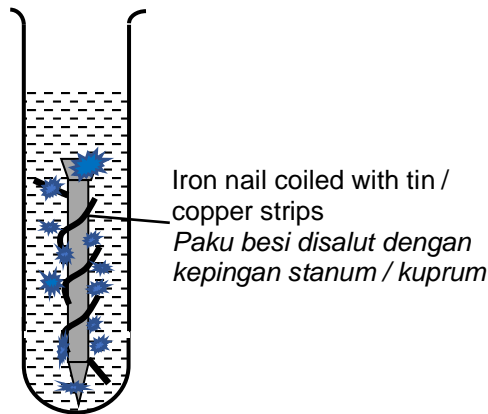


Diagram 4
Rajah 4

- (a) Base on Diagram 4, state the observations for this experiment.
Berdasarkan Rajah 4, nyatakan pemerhatian dalam eksperimen ini.

.....

[3 marks / 3 markah]

- (b) Based on the observation in question (a), state the inference.
Berdasarkan pemerhatian dalam soalan (a), nyatakan inferens.

.....

[3 marks / 3 markah]

- (c) State the operational definition for the rusting of iron in this experiment.
Nyatakan definisi secara operasi pengamatan besi dalam eksperimen ini.

.....

[3 marks / 3 markah]

- (d) A list of five metals are given as follows.
Satu senarai lima logam diberi seperti berikut.

Copper, Magnesium, zinc, lead, silver
Kuprum, Magnesium, Zink, Plumbum, Argentum

Classify the metals that speed up the rusting of iron and metals that inhibit the rusting of iron.

Kelaskan logam yang mempercepatkan pengurangan besi dan logam yang melambatkan pengurangan besi.

[3 marks / 3 markah]

2. The following conversation takes place in the laboratory while the teacher are demonstrating the experiment to the students.
Perbualan tersebut telah berlaku di dalam kelas semasa guru membuat demonstrasi eksperimen kepada pelajar.

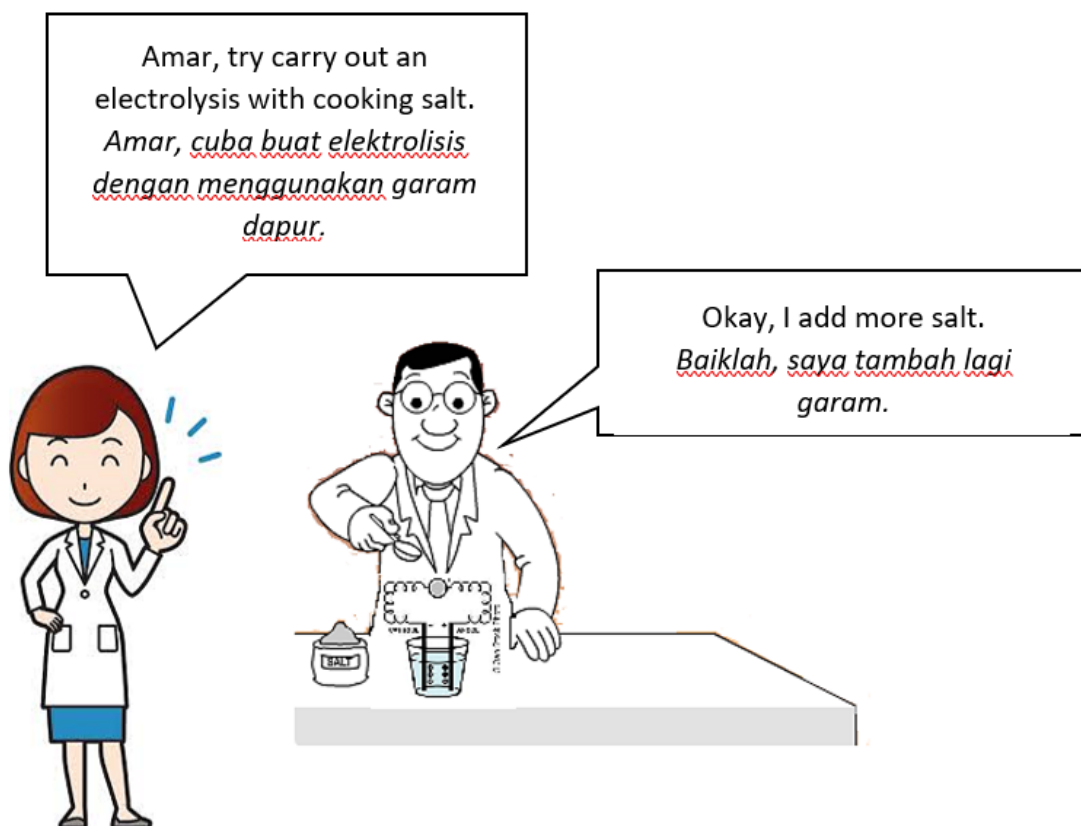


Diagram 5
 Rajah 5

Referring to the diagram, plan a laboratory experiment to investigate the effect of concentration of sodium chloride salt to the gas released at anode during electrolysis. In your answer explain how both gasses are tested.

Merujuk kepada rajah di atas, rancang satu eksperimen makmal untuk mengkaji kesan kepekatan larutan natrium klorida kepada gas yang terhasil di anod semasa elektrolisis. Dalam huraian anda terangkan bagaimana kedua-dua gas di anod diuji.

Your planning should include the following aspects:

Perancangan anda hendaklah mengandungi aspek-aspek berikut:

- Problem statement
Pernyataan masalah
- All the variables
Semua pembolehubah
- Statement of the hypothesis
Pernyataan hipotesis

- (d) List of materials and apparatus
Senarai bahan dan radas
- (e) Procedure of the experiment
Prosedur eksperimen
- (f) Tabulation of data
Penjadualan data

[17 marks]
[17 markah]

END OF QUESTION PAPER
KERTAS PEPERIKSAAN TAMAT

Marking Scheme Paper 3 Set 1
Skema Pemarkahan Kertas 3 Set 1

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah															
1 (a)	<p>Able to record the reading of electronic balance correctly in two decimal places. <i>Dapat membaca neraca elektronik dengan betul dalam dua tempat perpuluhan berserta unit yang betul.</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Alcohols <i>Alkohol</i></th> <th style="text-align: center;">Initial mass / g <i>Berat awal / g</i></th> <th style="text-align: center;">Final mass / g <i>Berat akhir / g</i></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Methanol, CH₃OH <i>Metanol, CH₃OH</i></td> <td style="text-align: center;">25.36</td> <td style="text-align: center;">24.25</td> </tr> <tr> <td style="text-align: center;">Ethanol, C₂H₅OH <i>Etanol, C₂H₅OH</i></td> <td style="text-align: center;">23.13</td> <td style="text-align: center;">22.28</td> </tr> <tr> <td style="text-align: center;">Propanol, C₃H₇OH</td> <td style="text-align: center;">22.81</td> <td style="text-align: center;">22.06</td> </tr> <tr> <td style="text-align: center;">Butanol, C₄H₉OH</td> <td style="text-align: center;">24.74</td> <td style="text-align: center;">24.04</td> </tr> </tbody> </table>	Alcohols <i>Alkohol</i>	Initial mass / g <i>Berat awal / g</i>	Final mass / g <i>Berat akhir / g</i>	Methanol, CH ₃ OH <i>Metanol, CH₃OH</i>	25.36	24.25	Ethanol, C ₂ H ₅ OH <i>Etanol, C₂H₅OH</i>	23.13	22.28	Propanol, C ₃ H ₇ OH	22.81	22.06	Butanol, C ₄ H ₉ OH	24.74	24.04	3
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	<p>One mistake in recording of data such as unit, reading and decimal places. <i>Satu kesilapan dalam merekodkan data seperti unit, bacaan dan titik perpuluhan.</i></p>	2															
	<p>Two mistakes in recording of data such as unit, reading and decimal places. <i>Dua kesilapan dalam jadual seperti unit, bacaan dan titik perpuluhan.</i></p>	1															
	<p>More than two mistakes. <i>Lebih dari tiga kesilapan salah.</i></p>	0															

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah															
1 (b)	<p>Able to construct table correctly with correct unit. <i>Dapat membina jadual dengan lengkap berserta unit yang betul.</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Alcohols <i>Alkohol</i></th> <th style="text-align: center;">Initial mass / g <i>Berat awal / g</i></th> <th style="text-align: center;">Final mass / g <i>Berat akhir / g</i></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Methanol, CH₃OH <i>Metanol, CH₃OH</i></td> <td style="text-align: center;">25.36</td> <td style="text-align: center;">24.25</td> </tr> <tr> <td style="text-align: center;">Ethanol, C₂H₅OH <i>Etanol, C₂H₅OH</i></td> <td style="text-align: center;">23.13</td> <td style="text-align: center;">22.28</td> </tr> <tr> <td style="text-align: center;">Propanol, C₃H₇OH</td> <td style="text-align: center;">22.81</td> <td style="text-align: center;">22.06</td> </tr> <tr> <td style="text-align: center;">Butanol, C₄H₉OH</td> <td style="text-align: center;">24.74</td> <td style="text-align: center;">24.04</td> </tr> </tbody> </table>	Alcohols <i>Alkohol</i>	Initial mass / g <i>Berat awal / g</i>	Final mass / g <i>Berat akhir / g</i>	Methanol, CH ₃ OH <i>Metanol, CH₃OH</i>	25.36	24.25	Ethanol, C ₂ H ₅ OH <i>Etanol, C₂H₅OH</i>	23.13	22.28	Propanol, C ₃ H ₇ OH	22.81	22.06	Butanol, C ₄ H ₉ OH	24.74	24.04	3
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	One mistake in table such as, unit, reading, construction of table and decimal places. Satu kesilapan dalam jadual seperti unit, bacaan, pembinaan jadual dan titik perpuluhan.	2
	Two mistake in table such as, unit, reading, construction of table and decimal places. Dua kesilapan dalam jadual seperti unit, bacaan dan titik perpuluhan.	1
	More than two mistakes. Lebih dari tiga kesilapan salah.	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
1 (c)	All correct variables given are correct. <i>Semua pemboleh ubah di berikan adalah betul.</i> (a) Manipulation : Type of alcohol <i>Manipulasi : Jenis alcohol</i> (b) Responding : Heat of combustion <i>Bergerak balas : Haba pembakaran</i> (c) Constant : Volume of distilled water / copper container <i>Dimalarkan : Isipadu air suling / bekas kuprum</i>	3
	One mistake in variable. Satu kesilapan dalam pembolehubah.	2
	Two mistakes in variables. Dua kesilapan dalam pembolehubah.	1
	More than two mistakes. Lebih dari dua kesilapan.	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
1 (d)	Able to state the hypothesis correctly. <i>Dapat menyatakan hipotesis dengan betul.</i> The higher the number of carbon atom per molecule alcohol, the higher the heat of combustion / The higher the number of carbon atom per molecule alcohol, the lower the heat of combustion. <i>Semakin tinggi bilangan atom karbon per molekul alkohol, semakin tinggi haba pembakaran / Semakin tinggi bilangan atom karbon per molekul alkohol, semakin rendah haba pembakaran.</i>	3
	Slight mistakes in hypothesis. <i>Sedikit kesilapan dalam hipotesis.</i> The higher the number of carbon atom alcohol, the higher the heat of combustion. <i>Semakin tinggi bilangan atom karbon alkohol, semakin tinggi haba pembakaran.</i>	2

	Idea of hypothesis is given. <i>Idea hipotesis diberikan.</i>	
	The number of carbon atom alcohol influence the heat of combustion / The number of carbon atom proportion with the heat of combustion. <i>Bilangan atom karbon alkohol mempengaruhi haba pembakaran / Bilangan atom karbon alkohol berkadar dengan haba pembakaran.</i>	1
	Wrong response. <i>Respons yang salah.</i>	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
1 (e)	All calculation are correct. <i>Semua pengiraan betul .</i>	1
	$Q = 200 \times 4.2 \times 30$ $= 25200$	1
	$\text{Mol } \text{CH}_3\text{OH} = 1.11 / 32 = 0.0347$	1
	$\Delta H = - 726.2 \text{ kJ mol}^{-1}$	1
	One mistake in calculation. <i>Satu kesilapan dalam pengiraan.</i>	2
	Two mistakes in calculation. <i>Dua kesilapan dalam pengiraan.</i>	1
	Wrong calculation. Pengiraan yang salah.	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
1 (f)	Correct prediction given. <i>Membuat ramalan yang betul.</i>	3
	[3200 – 3400] kJ mol ⁻¹	
	Less correct figure, unit is not given or wrongly. <i>Angka yang kurang tepat, unit tidak di beri atau salah.</i>	2
	[3100 - 3200] or [3400 - 3600]	
	Range of answer is given. <i>Jawapan dalam bentuk julat.</i>	1
	More than 2679 kJ mol ⁻¹ <i>Lebih dari 2679 kJ mol⁻¹</i>	

	Wrong respons given. <i>Respons yang salah.</i> Less than 2679 kJ mol ⁻¹ <i>Kurang dari 2679 kJ mol⁻¹</i>	0
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Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
1 (g)	Able to give relationship correctly. <i>Dapat memberikan hubungan yang betul.</i> The higher the number of carbon atom per molecule with the lesser the mass of alcohol burnt. <i>Semakin tinggi bilangan karbon per molekul semakin rendah jisim alkohol di bakar.</i>	3
	Slight mistake in relationship. <i>Sedikit kesilapan dalam hubungan.</i> The higher the number of carbon atom with the lesser the mass of alcohol burnt. <i>Semakin tinggi bilangan karbon semakin rendah jisim alkohol di bakar.</i>	2
	Relationship written in the opposite or wrong manner. <i>Hubungan tersalah atau terbalik dituliskan.</i> The higher the number of carbon atom with the lesser the mass of alcohol burnt. <i>Semakin tinggi bilangan karbon semakin rendah jisim alkohol di bakar.</i>	1
	Wrong response. <i>Respons yang salah.</i>	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
2 (a)	Able to give correct observation. <i>Dapat menyatakan pemerhatian dengan betul.</i> Blue colour / spots is produced // Experiment I produced less blue spot / colour than experiment II. <i>Warna / tompok biru di dihasilkan // Eksperimen I menghasilkan tompok biru / warna dalam eksperimen II.</i>	3
	Slight mistake in observation. <i>Sedikit kesilapan pada pemerhatian.</i> Blue spots / colour <i>Warna / tompok biru</i>	2

	Idea of observation given. <i>Idea pemerhatian diberikan.</i> Blue / <i>Biru</i>	1
	Wrong response. <i>Respons yang salah.</i>	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
2 (b)	Able to state the inference correctly. <i>Dapat menyatakan inferens dengan betul.</i> Iron rust to produced Fe_{2+} ion <i>Besi berkarat untuk menghasilkan ion Fe_{2+}</i>	3
	Slight mistake in inference. <i>Sedikit kesilapan pada inferens.</i> Fe_{2+} ion is produced <i>Ion Fe_{2+} di hasilkan</i>	2
	Idea of inference is given. <i>Idea inferens di berikan.</i> Fe_{2+} ion / Fe_{2+} is blue/ Iron rust <i>Ion Fe_{2+} / warna biru ialah Fe_{2+}/ Besi berkarat</i>	1
	Wrong response. <i>Respons yang salah.</i>	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
2 (c)	Able to give correct operational definition. <i>Dapat memberikan operasi secara definisi dengan betul.</i> The iron is placed a jelly solution coiled with metal, when blue spot / colour is produce the iron rust. <i>Besi dimasukkan ke dalam larutan dililit dengan logam, apabila warna (tompok) biru terhasil besi berkarat.</i>	3
	Slight mistake in operational definition. <i>Sedikit kesilapan pada operasi secara definisi.</i> The iron is placed a jelly solution coiled with metal, when blue spot (colour) is produce // Blue spot / colour is produce the iron rust. <i>Besi di masukkan ke dalam larutan di lilit dengan logam, apabila warna biru terhasil // Tompok biru terhasil besi berkarat.</i>	2

	Idea of operational definition. <i>Idea operasi secara definisi diberikan.</i>	1
	Blue colour exists. <i>Warna biru terhasil.</i>	
	Wrong response. <i>Respons yang salah.</i>	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah				
2 (d)	Able to classify correctly. <i>Dapat mengelaskan dengan betul.</i>	3				
	<table border="1"> <tr> <td>Metals that speed up the rusting <i>Logam yang mempercepatkan pengurangan besi</i></td> <td>Metals that inhibit the rusting of iron <i>Logam yang melambatkan pengurangan besi</i></td> </tr> <tr> <td>Copper <i>Kuprum</i></td> <td rowspan="3">Magnesium Zinc <i>Zink</i></td> </tr> <tr> <td>Lead <i>Plumbum</i></td> </tr> <tr> <td>Silver <i>Argentum</i></td> </tr> </table>		Metals that speed up the rusting <i>Logam yang mempercepatkan pengurangan besi</i>	Metals that inhibit the rusting of iron <i>Logam yang melambatkan pengurangan besi</i>	Copper <i>Kuprum</i>	Magnesium Zinc <i>Zink</i>
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Lead <i>Plumbum</i>						
Silver <i>Argentum</i>						
	One mistake. <i>Satu kesilapan.</i>	2				
	Two mistake. <i>Dua kesilapan.</i>	1				
	More than two mistakes. <i>Lebih dari dua kesilapan.</i>	0				

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
3 (a)	<p>Able to state correct problem statement. <i>Dapat memberikan pernyataan masalah dengan betul.</i></p> <p>What is the effect of concentration of sodium chloride solution to the product of electrolysis at anode? // What is the product at anode if different concentration of sodium chloride solution is used?</p> <p><i>Apakah kesan kepekatan larutan natrium klorida ke atas hasilan elektrolisis di anod? // Apakah hasilan di anod semasa elektrolisis larutan natrium klorida dengan kepekatan berbeza dijalankan?</i></p>	3
	<p>Slight mistake in problem statement / Problem statement not in a question form. <i>Sedikit kesilapan pada pernyataan masalah / Pernyataan masalah bukan dalam bentuk soalan.</i></p> <p>What is the product at anode during electrolysis of sodium chloride? <i>Apakah yang akan di hasilkan di anod semasa elektrolisis natrium klorida?</i></p>	2
	<p>Able to give idea of problem statement. <i>Idea pernyataan masalah diberikan.</i></p> <p>The effect of concentration of sodium chloride solution to the product of electrolysis at anode. <i>Kesan kepekatan larutan natrium klorida ke atas hasilan elektrolisis di anod.</i></p>	1
	<p>Wrong response. <i>Respons yang salah.</i></p>	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
3 (b)	<p>Able to list the correct variables. <i>Dapat memberikan pembolehubah dengan betul.</i></p> <p>Manipulative : Concentration of sodium chloride solution <i>Manipulasi : Kepekatan asid</i></p> <p>Responding : Product at anode <i>Bergerak balas : Hasilan di anod</i></p> <p>Constant : Type of solution / larutan natrium klorida <i>Di malarkan : Jenis larutan / sodium chloride solution</i></p>	3

	One mistake. <i>Satu kesilapan.</i>	2
	Two mistakes. <i>Dua kesilapan.</i>	1
	Wrong response. <i>Respons yang salah.</i>	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah
3 (c)	<p>Able to give hypothesis correctly. <i>Dapat memberikan hipotesis dengan betul.</i></p> <p>If the concentration of sodium chloride solution is high (example : more than 0.001 mol dm⁻³) gas produced at anode is chlorine (greenish yellow gas) whereas if the concentration of sodium chloride solution is low (example : less than 0.001 mol dm⁻³) gas produced at anode is oxygen gas (colourless gas)</p> <p><i>Jika kepekatan larutan natrium klorida adalah tinggi (contoh : lebih dari 0.001 mol dm⁻³) gas terhasil di anod ialah klorin (gas kuning kehijauan) manakala jika kepekatan larutan natrium klorida adalah rendah (contoh : kurang atau sama dengan 0.001 mol dm⁻³) gas terhasil di anod ialah oksigen (gas tak berwarna)</i></p>	3
	<p>Slight mistake in hypothesis. <i>Sedikit kesilapan pada hipotesis.</i></p> <p>If the concentration of sodium chloride solution is higher gas produced at anode is chlorine whereas if the concentration of sodium chloride solution is low gas produced at anode is oxygen.</p> <p><i>Jika kepekatan larutan natrium klorida adalah lebih tinggi gas terhasil di anod ialah gas klorin manakala jika kepekatan larutan natrium klorida adalah rendah gas terhasil di anod ialah gas oksigen.</i></p>	2
	<p>Idea of hypothesis is given. <i>Idea hipotesis diberikan.</i></p> <p>High concentration in solution produced greenish yellow gas and low concentration produce colourless gas // High concentration produce oxygen gas whereas low concentration produce chlorine.</p> <p><i>Kepekatan larutan yang tinggi menghasilkan gas kuning kehijauan dan cair menghasilkan gas tak berwarna // Kepekatan larutan yang tinggi gas oksigen di hasilkan manakala kepekatan rendah hasilkan klorin.</i></p>	1

	Wrong respons. <i>Respons yang salah.</i>	0
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Question <i>Soalan</i>	Suggestion answer <i>Cadangan jawapan</i>	Marks <i>Markah</i>
2 (d)	<p>Able to give all the list of apparatus and material. <i>Dapat memberikan alat radas dan bahan dengan betul.</i></p> <p>Apparatus : Beaker, carbon rod, connecting wire, battery, test tubes, wooden splinter, litmus paper, bunsen burner</p> <p>Materials : 0.5 mol dm⁻³ of sodium chloride solution, 0.001 mol dm⁻³ [or suitable solution example HCl, KCl, MgCl₂ etc]</p> <p><i>Alat radas :</i> <i>Bikar, rod karbon, dawai penyambung, bateri, tabung uji, kayu uji, kertas litmus, penunu bunsen</i></p> <p><i>Bahan :</i> <i>Larutan natrium klorida 0.5 mol dm⁻³, larutan natrium klorida 0.001 mol dm⁻³, [atau larutan yang sesuai seperti HCl , KCl, MgCl₂ dsb]</i></p>	3
	One mistake. <i>Satu kesilapan.</i>	2
	Two mistakes. <i>Dua kesilapan.</i>	1
	Wrong response. <i>Respons yang salah.</i>	0

Question <i>Soalan</i>	Suggestion answer <i>Cadangan jawapan</i>	Marks <i>Markah</i>
2 (e)	<p>Able to write a correct procedure. <i>Dapat memberikan prosedur dengan betul.</i></p> <p>1. Pour 0.5 mol dm⁻³ of sodium chloride solution into a beaker <i>Tuangkan 0.5 mol dm⁻³ larutan natrium klorida ke dalam sebuah bikar.</i></p> <p>2. Dip carbon electrode into a beaker. <i>Celupkan rod karbon ke dalam bikar itu.</i></p> <p>3. Connect the carbon electrod to a battery. <i>Sambungkan elektrod karbon kepada bateri.</i></p>	3

	<p>4. Collect gas released at anode. <i>Kutip gas di bebaskan di anod.</i></p> <p>5. Test the gas with glowing splinter and damp blue litmus paper. <i>Uji gas dengan kayu uji berbara dan kertas litmus lembap.</i></p> <p>6. Repeat experiment with 0.001 mol dm⁻³ of sodium chloride solution. <i>Ulangi eksperimen dengan menggunakan larutan natrium klorida 0.001 mol dm⁻³.</i></p>	
	<p>One mistake. Satu kesilapan.</p>	2
	<p>Two mistakes. Dua kesilapan.</p>	1
	<p>Wrong response. <i>Respons yang salah.</i></p>	0

Question Soalan	Suggestion answer Cadangan jawapan	Marks Markah									
2 (f)	<p>Able to draw suitable table. <i>Dapat memberikan jadual data yang sesuai.</i></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Concentration of NaCl / mol dm⁻³ <i>Kepekatan NaCl / mol dm⁻³</i></th> <th>Effect of wooden splinter <i>Kesan kepada kayu uji berbara</i></th> <th>Effect of litmus paper <i>Kesan kepada kertas litmus</i></th> </tr> </thead> <tbody> <tr> <td>0.5</td> <td></td> <td></td> </tr> <tr> <td>0.001</td> <td></td> <td></td> </tr> </tbody> </table>	Concentration of NaCl / mol dm ⁻³ <i>Kepekatan NaCl / mol dm⁻³</i>	Effect of wooden splinter <i>Kesan kepada kayu uji berbara</i>	Effect of litmus paper <i>Kesan kepada kertas litmus</i>	0.5			0.001			3
Concentration of NaCl / mol dm ⁻³ <i>Kepekatan NaCl / mol dm⁻³</i>	Effect of wooden splinter <i>Kesan kepada kayu uji berbara</i>	Effect of litmus paper <i>Kesan kepada kertas litmus</i>									
0.5											
0.001											
	<p>One mistake in tabulation of data example unit and line. Satu kesilapan pada jadual seperti unit dan garisan jadual.</p>	2									
	<p>Two mistake in tabulation of data example unit and line. Dua kesilapan pada jadual seperti unit dan garisan jadual.</p>	1									
	<p>More than two mistakes. Lebih dari dua kesilapan.</p>	0									