



**MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI SEMBILAN**

**PROGRAM PENINGKATAN AKADEMIK TINGKATAN 5
SEKOLAH-SEKOLAH MENENGAH NEGERI SEMBILAN
2018**

CHEMISTRY 4541

PERATURAN PEMARKAHAN

KERTAS 1, 2 DAN 3

UNTUK KEGUNAAN PEMERIKSA SAHAJA

AMARAN

Peraturan pemarkahan ini **SULIT** dan **Hak Cipta MPSM NSDK**.
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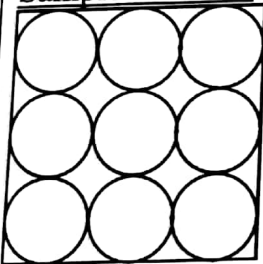
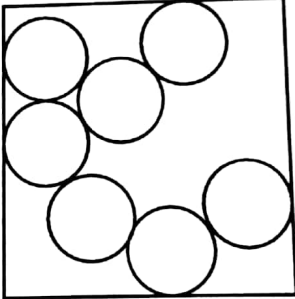
MAJLIS PENGETUA SEKOLAH MENENGAH MALAYSIA
CAWANGAN NEGERI SEMBILAN

PEPERIKSAAN PERCUBAAN BERSAMA
SIJIL PELAJARAN MALAYSIA 2018
CHEMISTRY KERTAS 1

No.	Key	No.	Key
1	B	26	D
2	A	27	B
3	B	28	D
4	C	29	B
5	C	30	D
6	A	31	C
7	A	32	B
8	A	33	A
9	D	34	A
10	D	35	A
11	B	36	B
12	D	37	A
13	D	38	D
14	C	39	C
15	A	40	D
16	C	41	B
17	B	42	D
18	C	43	B
19	C	44	D
20	D	45	B
21	C	46	D
22	C	47	C
23	A	48	C
24	A	49	A
25	D	50	B

A	12
B	12
C	13
D	13

CHEMISTRY KERTAS 2

No.	Mark Scheme	Mark	Total Mark
1			
(a)(i)	<p><i>Able to state the meaning of nucleon number correctly</i></p> <p><u>Sample answers:</u> Jumlah bilangan proton dan neutron dalam nukleus satu atom.</p>	1	1
(ii)	<p><i>Able to state the nucleon number of atom S correctly</i></p> <p><u>Answer:</u> 27</p>	1	1
(iii)	<p><i>Able to state which atoms are isotopes correctly</i></p> <p><u>Answers:</u> P dan Q</p> <p><u>Sample answers:</u> mempunyai bilangan proton/nombor proton yang sama tetapi bilangan neutron/nombor nukleon yang berbeza</p>	1	2
(b)(i)	<p><i>Able to state the melting point of naphthalene correctly</i></p> <p><u>Answer:</u> $T_2^{\circ}\text{C}$</p>	1	1
(ii)	<p><i>Able to sketch the arrangement of particles at the stages A and C</i></p> <p><u>Sample answers:</u></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>A</p> </div> <div style="text-align: center;">  <p>C</p> </div> </div>	1+1	2
(iii)	<p><i>Able to explain why the temperature will not increase even though heat is provided</i></p> <p><u>Sample answers:</u> P1 Haba diserap P2 untuk mengatasi daya tarikan antara molekul/zarah</p>	1 1	2
		Total	9

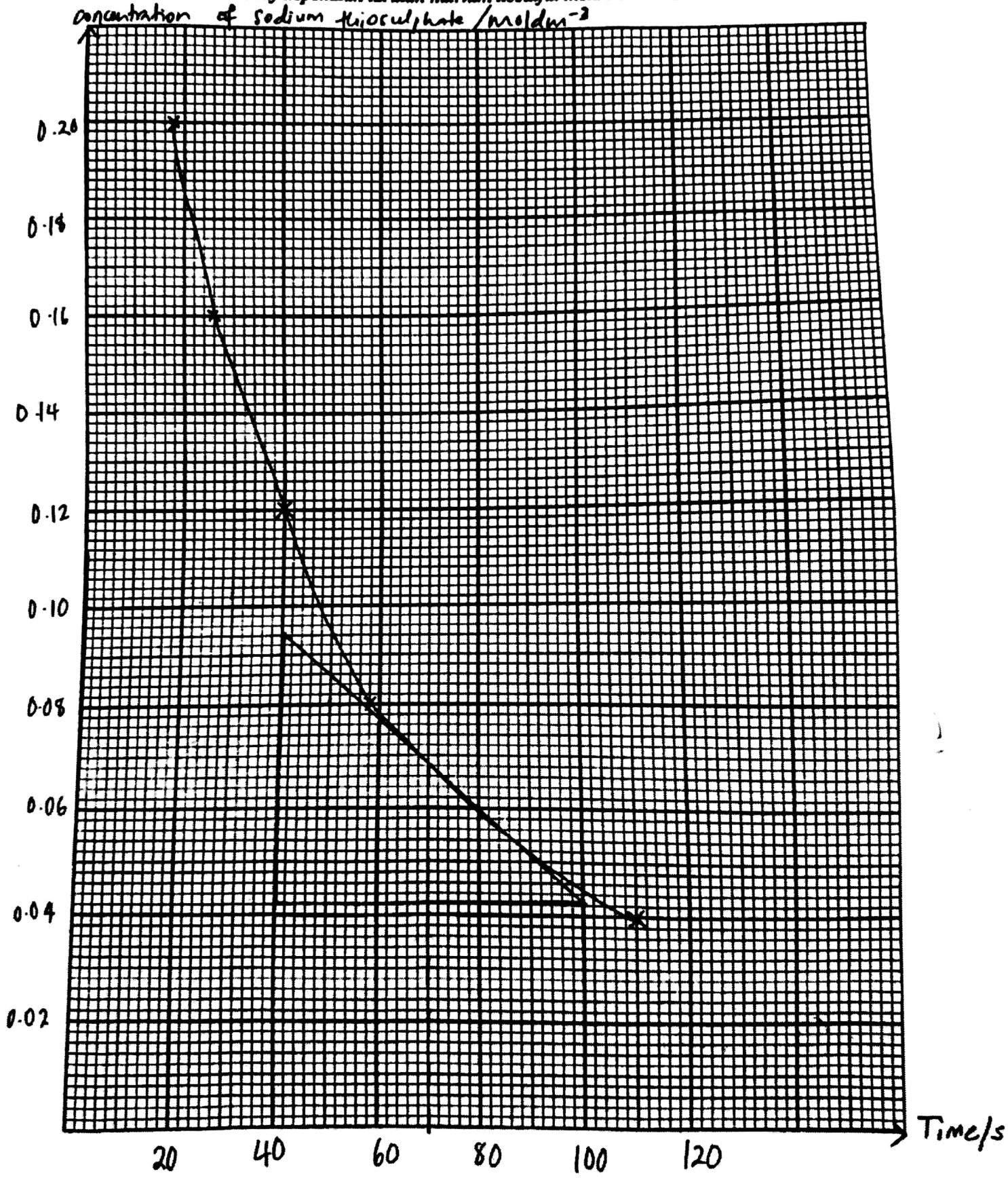
No	Marking scheme	Mark	Total Mark
2	<i>Able to state the name of reactants correctly</i>		
(a)(i)	<u>Answers:</u> Nitrogen dan hidrogen	1+1	2
(ii)	<i>Able to name the process correctly</i> <u>Answers:</u> Proses Haber	1	1
(iii)	<i>Able to state two optimum conditions needed for the reaction correctly</i> <u>Sample answers:</u> 450°C // 200 atm // Serbuk besi <i>Any two</i>	1+ 1	2
(iv)	<i>Able to state the main source of nitrogen gas correctly</i> <u>Answer:</u> Atmosfera	1	1
(v)	<i>Able to state one physical property of the product correctly</i> <u>Sample answers:</u> Gas tanpa warna//berbau sengit//larut di dalam air	1	1
(b) (i)	<i>Able to state the name of acid X correctly</i> <u>Answer:</u> Asid sulfurik	1	1
(ii)	<i>Able to write the chemical formula of the product correctly</i> <u>Answer:</u> (NH ₄) ₂ SO ₄	1	1
		Total	9

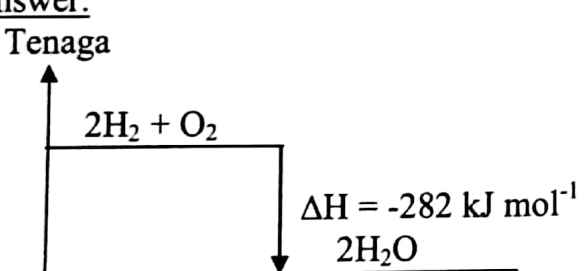
No	Marking scheme	Mark													
		Sub	Total												
3	<i>Able to define empirical formula correctly</i>														
(a)	<u>Answer:</u> Formula yang menunjukkan nisbah teringkas atom unsur dalam satu sebatian	1	1												
(b)	<i>Able to state the colour of the residue correctly</i> <u>Answer:</u> Kelabu	1	1												
(c)	<i>Able to state the name of X correctly</i> <u>Sample answer:</u> Kalsium klorida kontang // Kuprum(II) klorida kontang	1	1												
(d)	<i>Able to state the role of hydrogen gas correctly</i> <u>Sample answer:</u> Untuk menurunkan plumbum(II) oksida // agen penurunan	1	1												
(e)	<i>Able to calculate the empirical formula for lead(II) oxide correctly</i> <u>Answer:</u> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Unsur</th> <th>Pb</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>Jisim (g)</td> <td>6.21</td> <td>0.48</td> </tr> <tr> <td>Bilangan mol</td> <td>$6.21/207 = 0.03$</td> <td>$0.48/16 = 0.03$</td> </tr> <tr> <td>Nisbah teringkas</td> <td>1</td> <td>1</td> </tr> </tbody> </table> Formula empirik : PbO	Unsur	Pb	O	Jisim (g)	6.21	0.48	Bilangan mol	$6.21/207 = 0.03$	$0.48/16 = 0.03$	Nisbah teringkas	1	1	1 1 1	3
Unsur	Pb	O													
Jisim (g)	6.21	0.48													
Bilangan mol	$6.21/207 = 0.03$	$0.48/16 = 0.03$													
Nisbah teringkas	1	1													
(f)	<i>Able to write a balanced chemical equation for this reaction</i> <u>Answer:</u> $PbO + H_2 \rightarrow Pb + H_2O$	1	1												
(g)	<i>Able to explain how to ensure all oxide of lead is reduced to lead correctly</i> <u>Answer:</u> Ulang proses pemanasan, penyejukan dan penimbangan sehingga jisim tetap diperolehi	1	1												
(h)	<i>Able to state the name of a metal oxide which can be used to replace lead(II) oxide correctly</i> <u>Sample answer:</u> Kuprum(II) oksida // Argentum oksida	1	1												
		Total	10												

No	Explanation	Mark	Total Mark						
4 (a)(i)	<i>Able to state the name of gas Y correctly</i> Answer: Nitrogen dioksida	1	1						
(ii)	<i>Able to write a balance chemical equation correctly</i> Answer: $2 \text{Zn}(\text{NO}_3)_2 \rightarrow 2 \text{ZnO} + 4 \text{NO}_2 + \text{O}_2$ 1. Betul formula bahan dan hasil tindak balas 2. Persamaan seimbang	1 1	2						
(iv)	<i>Able to state the colour of solid X when it is hot and cold correctly</i> Answer: <table border="1" style="margin-left: 40px;"> <tr> <td style="width: 100px;"></td> <td style="text-align: center;">Panas</td> <td style="text-align: center;">Sejuk</td> </tr> <tr> <td></td> <td style="text-align: center;">Kuning</td> <td style="text-align: center;">Putih</td> </tr> </table>		Panas	Sejuk		Kuning	Putih	1+1	2
	Panas	Sejuk							
	Kuning	Putih							
(b)(i)	<i>Able to state the name of reaction II correctly</i> Answer: Peneutralan	1	1						
(ii)	<i>Able to predict the pH value of solution Z correctly</i> Answer: 7	1	1						
(iii)	<i>Able to describe a chemical test to verify the anion present in solution Z correctly</i> Sample answers: 1. Tambah 2 cm^3 asid hidroklorik ke dalam tabung uji yang mengandungi 2 cm^3 larutan Z 2. Tambah 2 cm^3 larutan barium klorida 3. Mendakan putih terbentuk <i>Reject: if the total volume of solution in test tube is more than 10 cm^3</i>	1 1 1	3						
		Total	10						

No	Explanation	Mark	Total Mark
5 (a)	<i>Able to draw the graph for the experiment correctly</i> <u>Answers:</u> 1. Skala seragam bagi paksi Y dan X 2. Pemindahan semua data yang betul 3. Lengkung licin Rujuk graf pada muka surat : 8	1 1 1	3
(b)	<i>Able to predict the time taken for mark X to disappear correctly</i> <u>Answer:</u> [44 - 48] s	1	1
(c)	<i>Able to calculate the rate of reaction at 70 s correctly</i> <u>Sample answers:</u> Kadar tindak balas pada 70 s = $[0.04 - 0.094]/[100 - 40]$ = - 0.0009 1. Garis tangen pada lengkung 2. $-[0.0009 \pm 0.0001]$ Accept answer without negative sign	1 1	2
(d)	<i>Able to explain how concentration of sodium thiosulphate solution increases the rate of reaction correctly</i> <u>Sample answers:</u> 1. Apabila kepekatan meningkat, bilangan zarah per unit isipadu meningkat 2. Frekuensi perlanggaran antara ion hidrogen dan ion tiosulfat meningkat 3. Frekuensi perlanggaran berkesan meningkat	1 1 1	3
(e)	<i>Able to predict the time taken for X mark to disappear correctly</i> <u>Sample answers:</u> Masa yang diambil lebih lama Dan alasan Lebih banyak mendakan/sulfur/pepejal diperlukan untuk menutup kawasan tapak kelalang kon yang lebih besar	1 1	2
		Total	11

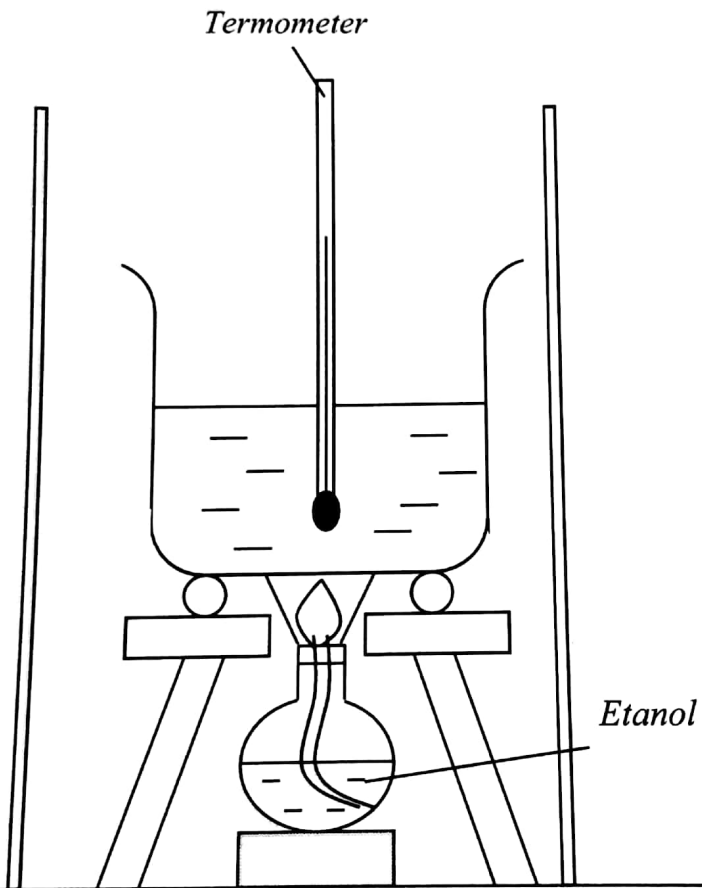
Graph of concentration of sodium thiosulphate against time
Graf kepekatan larutan natrium tiosulfat melawan masa



No.	Mark Scheme	Mark	Total Mark
6 (a)(i)	<p>Able to write the chemical equation for the combustion of hydrogen correctly</p> <p><u>Answer:</u> $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$</p> <p>P1: Betul formula bahan dan hasil tindak balas P2: Seimbang persamaan</p>	1 1	2
(ii)	<p>Able to state whether the reaction is endothermic or exothermic correctly</p> <p><u>Answer:</u> Eksotermik (tindak balas/proses)</p> <p>Dan berikan alasan dengan betul</p> <p><u>Sample answer:</u> ΔH mempunyai nilai negatif //haba dibebaskan</p>	1 1	2
(iii)	<p>Able to draw the energy level diagram for the combustion of hydrogen correctly</p> <p><u>Answer:</u></p>  <p>P1: Paksi-y dilabel "Tenaga" dan dua aras tenaga berbeza dengan betul P2: Bahan, hasil dan ΔH dilabel dengan betul</p>	1 1	2
(b)	<p>Able to explain why there is a difference in the values of heat released correctly</p> <p><u>Sample answers:</u></p> <p>P1 Asid hidroklorik adalah asid monobes/monoprotik dan asid sulfurik adalah asid dwibes/diprotik // 1 mol HCl mengion dalam air menghasilkan 1 mol ion H^+ manakala 1 mol H_2SO_4 mengion dalam air menghasilkan 2 mol ion H^+.</p> <p>P2 Kepekatan ion H^+ dua kali ganda dalam H_2SO_4</p> <p>P3 Molekul air yang terbentuk apabila menggunakan H_2SO_4 adalah dua kali ganda</p>	1 1 1	3

(c) *Able to complete Diagram 6.2 with suitable apparatus correctly*

Answer:



P1 *Bebuli termometer tenggelam di dalam air tanpa menyentuh dasar bekas kuprum*

P2 *Termometer dilabel*

1

1

2

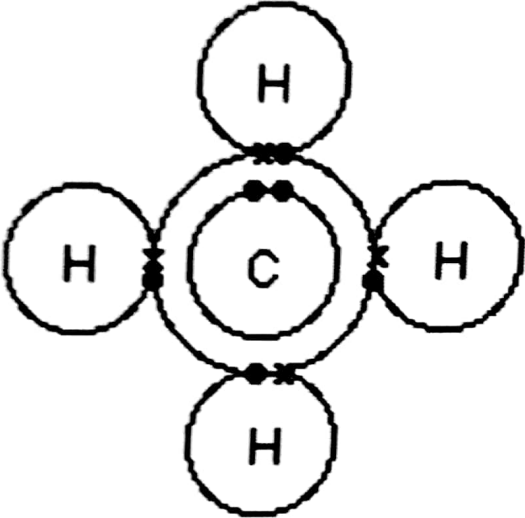
Total

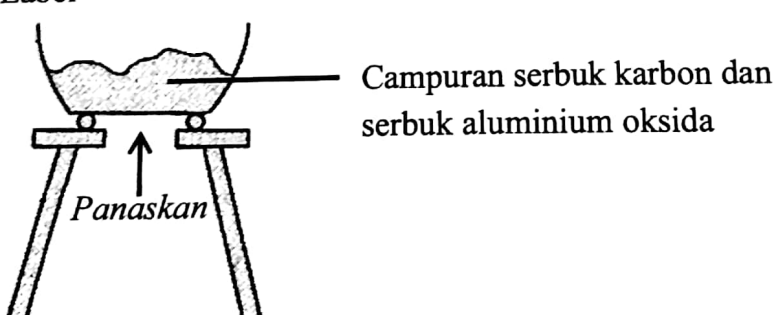
11

No	Marking scheme	Mark	Total Mark
7 (a)	<p>Able to state the homologous series, general formula and name the hydrocarbon X correctly</p> <p><u>Answers:</u></p> <ol style="list-style-type: none"> Alkena C_nH_{2n} Pent-1-ena 	1 1 1	3
(b)	<p>Able to state the name of compound Q and process I, able to draw the structure formula of Q and able to state the conditions required to produce optimum Q correctly</p> <p><u>Answers:</u></p> <ol style="list-style-type: none"> Pentan-1-ol Penghidratan // Penambahan air $\begin{array}{cccccc} & H & H & H & H & H \\ & & & & & \\ H & -C & -C & -C & -C & -C & -O-H \\ & & & & & \\ & H & H & H & H & H \end{array}$ $300^{\circ}C$ 60 atm Asid fosforik pekat sebagai mangkin 	1 1 1 1 1 1	6
(c)	<p>Able to name process II and write the correct chemical equation correctly</p> <p><u>Answers:</u></p> <ol style="list-style-type: none"> Penghidrogenan // Penambahan hidrogen $C_6H_{12} + H_2 \rightarrow C_6H_{14}$ <p>Able to draw the correct structure formula of <u>2</u> isomers of pentane and state the name correctly</p> <p><u>Sample answer:</u></p> $ \begin{array}{cccccc} H & H & H & H & H \\ & & & & \\ H-C & -C & -C & -C & -C-H \\ & & & & \\ H & H & H & H & H \end{array} $ <p>n-pentana</p> $ \begin{array}{cccc} & & H & \\ & & & \\ & & H-C & -H \\ & & & \\ H & H & H & H \\ & & & \\ H-C & -C & -C & -C-H \\ & & & \\ H & H & H & H \end{array} $ <p>2-metilbutana</p>	1 1 1 1	6

No	Marking scheme	Mark	Total Mark
	<pre> H H-C-H H H H-C - C - C-H H C H H-C-H H </pre> <p>2,2-dimetilpropana Any two</p>	<p>1</p> <p>1</p>	
(d)	<p><i>Able to explain the differences between hydrocarbon X and compound R correctly</i></p> <ol style="list-style-type: none"> 1. P adalah hidrokarbon tak tepu 2. Mempunyai ikatan ganda dua kovalen 3. X/Pentena adalah hidrokarbon reaktif 4. Sebatian R adalah hidrokarbon tepu 5. Mempunyai ikatan tunggal kovalen 6. R/Pentana adalah hidrokarbon tak reaktif 	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>Max 5</p>	<p>6</p>
		Total	20

No	Marking scheme	Mark													
		Sub	Total												
8 (a)(i)	<p>Able to arrange X, Y and Z in order of their reactivity correctly, state the name of X oxide, Y oxide and Z oxide correctly and write a balanced chemical equation for the reaction between element X with oxygen gas correctly</p> <p><u>Answers:</u></p> <ol style="list-style-type: none"> Z, X, Y Oksida Z = Litium oksida Oksida X = Natrium oksida Oksida Y = Kalium oksida Formula kimia yang betul bagi bahan dan hasil tindak balas Persamaan kimia seimbang $4\text{Na} + \text{O}_2 \rightarrow 2\text{Na}_2\text{O} //$ $4\text{X} + \text{O}_2 \rightarrow 2\text{X}_2\text{O}$ <p><u>Note:</u></p> <ol style="list-style-type: none"> P5 and P6 are given for $4\text{X} + \text{O}_2 \rightarrow 2\text{X}_2\text{O}$ if P2, P3, P4 were not answered. P5 is not given for $4\text{X} + \text{O}_2 \rightarrow 2\text{X}_2\text{O}$ if P3 is wrong. Mark for P6 only. 	1 1 1 1 1 1	6												
(ii)	<p>Able to calculate the mass of Y oxide produced when 104.5 kg of Y nitrate is being synthesized correctly</p> <p><u>Answers:</u></p> <table border="1"> <tbody> <tr> <td>1</td> <td>Jisim Y nitrat</td> <td>104500 g</td> </tr> <tr> <td>2</td> <td>Bilangan mol</td> <td>$104500 \div 101 // 1034.65 \text{ mol}$</td> </tr> <tr> <td>3</td> <td colspan="2">2 mol YNO_3 menghasilkan 6 mol Y_2O // 1034.65 mol YNO_3 menghasilkan 3103.95 mol Y_2O</td> </tr> <tr> <td>4</td> <td>Jisim</td> <td>$= 3103.95 \times 94 = 291771.3 \text{ g} //$ 291.77 kg</td> </tr> </tbody> </table>	1	Jisim Y nitrat	104500 g	2	Bilangan mol	$104500 \div 101 // 1034.65 \text{ mol}$	3	2 mol YNO_3 menghasilkan 6 mol Y_2O // 1034.65 mol YNO_3 menghasilkan 3103.95 mol Y_2O		4	Jisim	$= 3103.95 \times 94 = 291771.3 \text{ g} //$ 291.77 kg	1 1 1 1	4
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4	Jisim	$= 3103.95 \times 94 = 291771.3 \text{ g} //$ 291.77 kg													
(b)	<p>Able to explain how the fuel compound is formed and draw the electron arrangement for the compound correctly</p> <p><u>Sample answers:</u></p> <ol style="list-style-type: none"> Susunan elektron bagi atom karbon ialah 2.4 Atom karbon menyumbang 4 elektron Untuk mencapai susunan elektron oktet yang stabil Susunan elektron bagi atom hidrogen ialah 1 Atom hidrogen menyumbang 1 elektron Untuk mencapai susunan elektron duplet yang stabil 4 atom hidrogen berkongsi 1 elektron masing-masing dengan 1 atom karbon untuk membentuk CH_4 Bilangan unsur dan jenis sebatian betul 	1 1 1 1 1 1 1 1 1													

No	Marking scheme	Mark	
		Sub	Total
	10. Bilangan elektron betul	1	
			10
		Total	20

No	Marking scheme	Mark	Total Mark
9	Able to explain the answer based on the aspects given correctly		
(a)(i)	<p>Sample answers:</p> <ol style="list-style-type: none"> Agen penurunan yang betul: Contoh : Larutan ferum (II) sulfat Nombor pengoksidaan klorin berkurang dari 0 kepada -1 Nombor pengoksidaan ferum bertambah dari +2 kepada +3 Klorin mengalami penurunan dan ion ferum(II)/FeSO₄ mengalami pengoksidaan Klorin bertindak sebagai agen pengoksidaan Ion ferum(II)/FeSO₄ bertindak sebagai agen penurunan $\text{Cl}_2 + 2e \rightarrow 2\text{Cl}^-$ $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + e$ 	1 1 1 1 1 1 1 1	8
(ii)	<p>Able to describe a chemical test to verify the product of oxidation process correctly</p> <p>Sample answers: [Berdasarkan (a)(i)]</p> <ol style="list-style-type: none"> Tambah 2 cm³ larutan natrium hidroksida ke dalam tabung uji yang mengandungi hasil tindak balas Mendakan perang terbentuk 	1 1	2
(b)	<p>Able to describe an experiment to verify the position of carbon in the reactivity series of metal correctly</p> <p>Sample answers:</p> <ol style="list-style-type: none"> Logam Y – Zink / Ferum / Stanum / Plumbum / Kuprum Logam Z – Aluminium / Magnesium Gambar rajah berfungsi Label <div style="text-align: center;">  </div> <ol style="list-style-type: none"> Campurkan satu spatula serbuk karbon dan satu spatula serbuk aluminium oksida ke dalam mangkuk pijar Panaskan campuran dengan kuat Rekod pemerhatian Ulang langkah 1 hingga 3 dengan menggunakan serbuk zink oksida Aluminium oksida + karbon: Tiada perubahan Zink oksida + karbon: Campuran berbara dengan terang // Pepejal kelabu terbentuk 	1 1 1 1 1 1 1 1 1	10
Total			20

No	Marking scheme	Mark	Total Mark
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10 (a) **Able to suggest metal X and metal Y, compare and contrast Cell I and Cell II correctly**

Sample answers:

1. Logam X: Kuprum
2. Logam Y: Magnesium / Aluminium / Zink / Iron / Tin / Lead

Any suitable metal

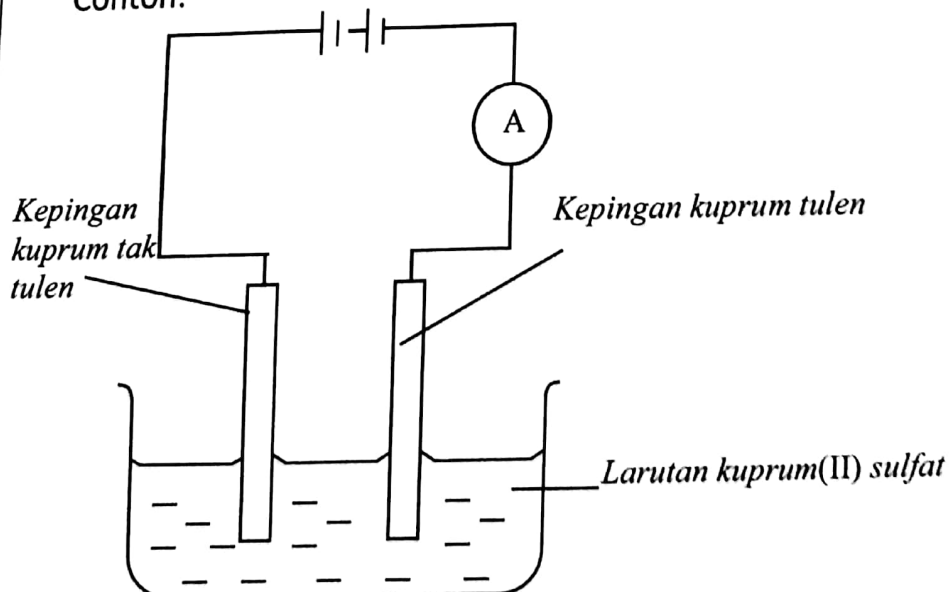
Aspects	Cell I	Cell II		
Perubahan tenaga	Elektrik kepada kimia	Kimia kepada Elektrik	1+1	
Persamaan setengah di anod	$\text{Cu} \rightarrow \text{Cu}^{2+} + 2e$	$\text{Mg} \rightarrow \text{Mg}^{2+} + 2e$	1+1	
Persamaan setengah di katod	$\text{Cu}^{2+} + 2e \rightarrow \text{Cu}$	$\text{Cu}^{2+} + 2e \rightarrow \text{Cu}$	1+1	
Pemerhatian di anod	Elektrod menjadi nipis	Elektrod menjadi nipis	1+1	
Pemerhatian di katod	Elektrod menjadi tebal	Elektrod menjadi tebal	1+1	Max 8

(b) **Able to describe an experiment to purify metal using electrolysis process correctly**

Sample answers:

1. Logam = kuprum / argentum
2. Bahan dan radas: Bikar / [bekas yang sesuai], wayar penyambung, ammeter/mentol, bateri, larutan kuprum(II) larutan, kuprum tak tulen, kuprum tulen
3. Rajah berfungsi
4. Label dengan betul

Contoh:



5. Tuang $[50-100]\text{cm}^3$ larutan kuprum(II) sulfat 1.0 mol dm^{-3} ke dalam bikar
6. Sambungkan kuprum tak tulen kepada anod dan kuprum tulen

No	Marking scheme	Mark	Total Mark
	kepada katod		
	7. Sambungkan elektrod kepada ammeter dan bateri dengan menggunakan wayar penyambung	1	
	8. Celupkan elektrod ke dalam elektrolit	1	
	9. Pemerhatian di anod: Kuprum tak tulen/elektrod di anod menjadi nipis	1	
	10. Pemerhatian di katod: Kuprum/elektrod di katod menjadi tebal	1	10
		Total	20

CHEMISTRY KERTAS 3

Question	Rubric	Score
1(a)	<i>Able to state all the variables correctly</i> <u>Sample answers:</u> MV : Kepekatan larutan ammonia RV : Nilai pH FV : larutan ammonia // Jenis larutan	3
	<i>Able to state any two variables correctly</i>	2
	<i>Able to state any one variables correctly</i>	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
1(b)	<i>Able to state the hypothesis correctly</i> Criteria : 1. MV follow by RV 2. Direction <u>Sample answer:</u> Kepekatan larutan ammonia meningkat, nilai pH meningkat	3
	<i>Able to state the hypothesis</i> <u>Sample answer:</u> Nilai pH meningkat, kepekatan larutan ammonia meningkat	2
	<i>Able to state the idea of hypothesis</i> <u>Sample answer:</u> Kepekatan/ammonia mempengaruhi nilai pH	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
1(c)	<i>Able to draw a graph correctly</i> Criteria: 1. Both axes are labelled with units. 2. Transfer all the points correctly. 3. Plot a smooth curve. [Refer to graph]	3
	<i>Able to draw a graph</i> Criteria: 1. Both axes are labelled without units. 2. Transfer at least 4 points correctly. 3. Plot a graph.	2
	<i>Have an idea to draw a graph</i> Criteria: 1. Plot a graph.	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
1(d)	<i>Able to state the relationship correctly</i> Sample answer: Semakin tinggi kepekatan larutan ammonia, semakin tinggi nilai pH	3
	<i>Able to state the relationship</i> Sample answer: Kepekatan larutan ammonia berkadar terus dengan nilai pH	2
	<i>Able to give an idea</i> Sample answer: Kepekatan ammonia mempengaruhi nilai pH	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
1(e)	<i>Able to 1. extrapolate the graph 2. indicate on the graph 3. state the prediction [9.02 - 9.08]</i> Sample answer: [Refer to graph]	3
	<i>Able to 1. extrapolate the graph 2. state the prediction</i>	2
	<i>Able to state the prediction [> 8.8]</i>	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
2(a)	<i>Able to state the highest temperature and temperature change with 1 decimal point for both sets</i> Answers: Set I 40.0, 12.0 Set II 38.0, 10.0	3
	<i>Able to state the highest temperature and temperature change for both sets</i>	2
	<i>Able to state one highest temperature or temperature change</i>	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
2(b)	<i>Able to state the observation correctly</i> <u>Sample answers:</u> Suhu tertinggi di Set I lebih tinggi daripada suhu di Set II// Suhu di Set I ialah 40°C dan di Set II ialah 38°C // Perubahan suhu di set II lebih tinggi daripada di set I	3
	<i>Able to state the observation</i> <u>Sample answers:</u> Set I 40 and Set II 38 // Suhu di set I lebih tinggi daripada suhu di set II	2
	<i>Have idea to state the observation</i> <u>Sample answer:</u> Suhu berlainan // Haba dibebaskan	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
2(c)	<i>Able to state the inference correctly</i> <u>Sample answers:</u> Tindak balas di Set I membebaskan lebih banyak (tenaga) haba daripada tindak balas di Set II // Set I menggunakan asid kuat manakala Set II menggunakan asid lemah	3
	<i>Able to state the inference</i> <u>Sample answers:</u> Set I/ Set II membebaskan banyak (tenaga) haba	2
	<i>Have idea to state inference</i> <u>Sample answers:</u> Haba berlainan	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
2(d)	<i>Able to state the operational definition correctly</i> Criteria: 1. State what must be done 2. State observation 3. State 1 mole of water produced <u>Sample answers:</u> Haba dibebaskan bila asid nitrik/etanoik ditambah ke dalam larutan kalium hidroksida dan 1 mol air dihasilkan.	3
	<i>Able to state the operational definition</i> Criteria: 1. State what must be done 2. State observation <u>Sample answers:</u> Haba dibebaskan bila asid nitrik/etanoik ditambah ke dalam larutan kalium hidroksida.	2
	<i>Able to state the idea of the operational definition</i> <u>Sample answers:</u> Tindak balas antara asid dan alkali	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
2(e)	<i>Able to classify all the cations and anions correctly</i> <u>Sample answers:</u> Cations : Ion hidrogen/H ⁺ , ion kalium/K ⁺ Anions: Ion hidroksida/OH ⁻ , ion nitrat/NO ₃ ⁻ , ion etanoat/CH ₃ COO ⁻	3
	<i>Able to classify 4 ions into cations and anions correctly</i>	2
	<i>Able to state one cation and one anion correctly</i>	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
2(f)	<i>Able to compare the rate of heat loss and state a reason correctly</i> <u>Sample answers:</u> Kadar kehilangan haba ke persekitaran lebih tinggi bila menggunakan bekas kuprum kerana kuprum ialah pengalir haba lebih baik daripada plastik.	3
	<i>Able to compare the rate of loss of heat correctly</i> <u>Sample answers:</u> Kadar kehilangan haba ke persekitaran lebih tinggi bila gunakan bekas kuprum // Kuprum adalah pengalir haba yang lebih baik	2
	<i>Have idea to state rate of heat loss</i> <u>Sample answer</u> Lebih banyak kehilangan haba.	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
3(a)	<i>Able to state the problem statement of the experiment correctly</i> <u>Sample answer:</u> Bagaimana jenis sebatian (larutan A dan B) mempengaruhi kekonduksian elektrik?	3
	<i>Able to state the problem statement of the experiment</i> <u>Sample answer:</u> Menentukan kekonduksian elektrik bagi larutan A/sebatian ion dan larutan B/sebatian kovalen.	2
	<i>Able to give an idea of the problem statement</i> <u>Sample answer:</u> Larutan A boleh mengkonduksikan elektrik // Larutan B tidak boleh mengkonduksikan elektrik	1
	<i>No response or wrong response</i>	0

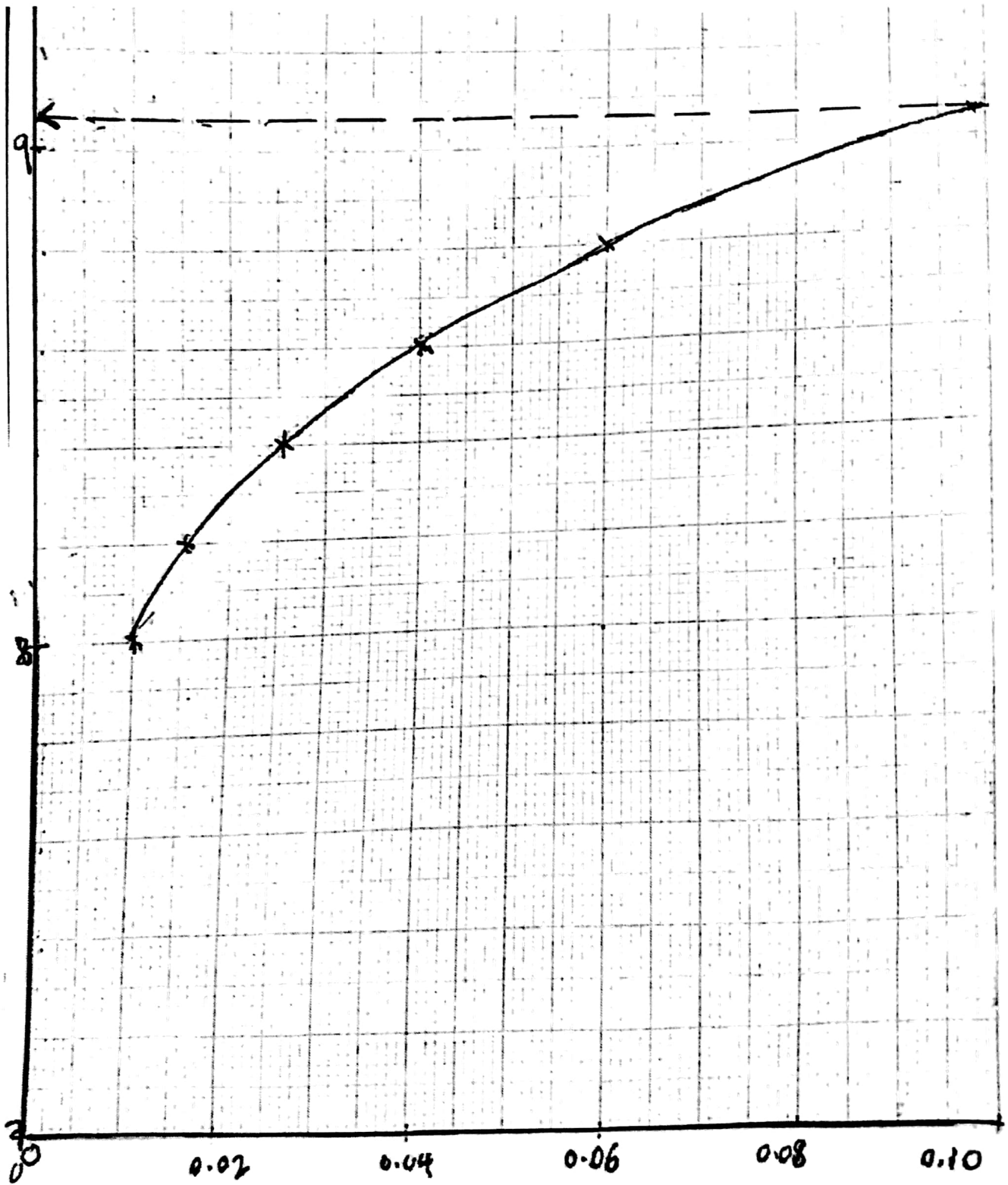
Question	Rubric	Score
3(b)	<i>Able to state all the variables correctly.</i> <u>Sample answer</u> Manipulated variable : Sebatian ion dan sebatian kovalen // [Nama bagi larutan A dan larutan B] Responding variable : Kekonduksian elektrik// nyalaan mentol Fixed variable : Elektrod karbon // mentol	3
	<i>Able to state <u>any two</u> variables correctly</i>	2
	<i>Able to state <u>any one</u> variable correctly</i>	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
3(c)	Able to state a relationship between the <u>MV</u> and the <u>RV</u> with direction correctly <u>Sample answers:</u> Larutan A/Larutan natrium klorida boleh mengkonduksikan elektrik manakala larutan B/larutan gula tidak boleh mengkonduksiakan elektrik.	3
	Able to state a relationship between the <u>MV</u> and the <u>RV</u> <u>Sample answer:</u> Mentol menyala apabila larutan A digunakan // Mentol tidak bernyala apabila larutan B digunakan	2
	Able to statet an idea of hypothesis <u>Sample answer:</u> Larutan mempengaruhi kekonduksian elektrik.	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
3(d)	Able to give complete list of substances and apparatus <u>Sample answers:</u> 2 substances : Larutan natrium klorida dan larutan gula 5 apparatus : Sel kering, elektrod karbon [elektrod yang sesuai],mentol, bikar, wayar penyambung [can refer to labelled diagram or procedure but only 1 substance and 2 apparatus]	3
	Able to give 1 substance : Larutan natrium klorida // larutan gula 4 apparatus : Sel kering, elektrod karbon [elektrod yang sesuai] / mentol, [bekas sesuai], wayar penyambung [can refer to labelled diagram or procedure but only 1 substance and 1 apparatus]	2
	Able to give 1 substance : Larutan natrium klorida // larutan gula 3 apparatus : Sel kering, , [bekas sesuai], wayar penyambung	1
	<i>No response or wrong response</i>	0

Question	Rubric	Score
3(e)	Able to list all the steps correctly <u>Sample answers:</u> 1. <i>Bikar diisi dengan [20-100 cm³] larutan natrium klorida</i> 2. <i>Karbon elektrod di masukkan ke dalam larutan itu dan disambung ke sel kering dan mentol dengan wayar penyambung.</i> 3. <i>Rekod pemerhatian</i> 4. <i>Ulang langkah di atas dengan menggantikan larutan natrium klorida dengan larutan gula.</i>	3
	Able to list steps 1,2,3 or 1,2,4	2
	Able to give steps 1 and 2	1
	No response or wrong response	0

Question	Rubric	Score						
3(f)	Able to construct a table with the following aspects: 1. Correct headings 2. Complete list of manipulated variables <u>Sample answer:</u> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th><i>Sebatian / Larutan</i></th> <th><i>Pemerhatian</i></th> </tr> </thead> <tbody> <tr> <td><i>Larutan natrium klorida</i></td> <td></td> </tr> <tr> <td><i>Larutan gula</i></td> <td></td> </tr> </tbody> </table>	<i>Sebatian / Larutan</i>	<i>Pemerhatian</i>	<i>Larutan natrium klorida</i>		<i>Larutan gula</i>		2
	<i>Sebatian / Larutan</i>	<i>Pemerhatian</i>						
	<i>Larutan natrium klorida</i>							
<i>Larutan gula</i>								
Able to construct a table with the following aspects: 1. one of the suitable headings 2. one name of the compound	1							
No response or wrong response or empty table	0							



END OF MARKING SCHEME