PENTAKSIRAN DIAGNOSTIK AKADEMIK SEKOLAH BERASRAMA PENUH 2020

PEPERIKSAAN PERCUBAAN SIJIL PELAJARAN MALAYSIA
CHEMISTRY **4541**
Kertas 1,2 & 3
Oktober 2020

PERATURAN PEMARKAHAN

KIMIA
CHEMISTRY
KERTAS 1,2 & 3

UNTUK KEGUNAAN PEMERIKSA SAHAJA

AMARAN

Peraturan pemarkahan ini **SULIT** dan **Hak Cipta Sekolah Berasrama Penuh.** Kegunaannya khusus untuk pemeriksa yang berkenaan sahaja. Sebarang maklumat dalam peraturan pemarkahan ini tidak boleh dimaklumkan kepada sesiapa. Peraturan pemarkahan ini tidak boleh dikeluarkan dalam apa-apa jua bentuk penulisan dan percetakan.

NAMA PEMERIKSA	:	
NAMA SEKOLAH	:	
TANDA TANGAN PENERIMAAN PERATURAN PERMARKAHAN	:	
TARIKH	:	
COP SEKOLAH	:	

Peraturan Pemarkahan ini mengandungi **39** halaman bercetak.

MARKING SCHEME CHEMISTRY (PAPER 1)

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

MARKING SCHEME CHEMISTRY (PAPER 2)

SECTION A

<table>
<tr><th colspan="2">No</th><th></th><th>Rubric</th><th>Mark</th><th>Total Marks</th></tr>
<tr><td>1</td><td>(a)</td><td></td><td>[Able to state process X, fertiliser A and catalyst P correctly]

Answer:
Process X : Haber Process// Proses Haber
Fertiliser A: Ammonium sulphate// Ammonium sulfat
Catalyst P : Platinum
Mangkin P</td><td>

1
1
1</td><td>

3</td></tr>
<tr><td></td><td>(b)</td><td>(i)</td><td>[Able to state the type of glass correctly]

Answer:
Borosilicate glass// kaca borosilikat</td><td>

1</td><td>

1</td></tr>
<tr><td></td><td></td><td>(ii)</td><td>[Able to give property of the glass correctly]

Answer:
Resistant to heat// tahan terhadap haba //
inert to chemicals// lengai terhadap bahan kimia</td><td>

1</td><td>

1</td></tr>
<tr><td></td><td>(c)</td><td></td><td>[Able to suggest food additives and their function correctly]

Answer:
<table><tr><th>Food additives
Bahan tambah makanan</th><th>Function
Fungsi</th></tr><tr><td>Stabiliser
Penstabil</td><td>Produce smoother/uniform texture// Menghasilkan tekstur lebih halus/seragam</td></tr><tr><td>Colouring
Pewarna</td><td>To make the food looks more attractive// Menjadikan makanan kelihatan lebih menarik</td></tr></table></td><td>

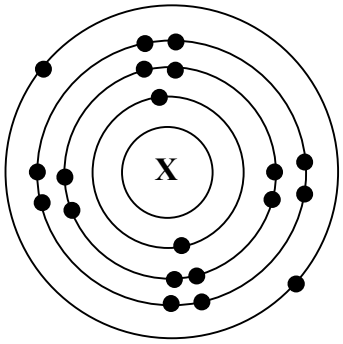
1+1

1+1</td><td>

4</td></tr>
<tr><td colspan="5">Total marks</td><td>9</td></tr>
</table>

No			Rubric	Mark	Total marks
2	(a)	(i)	**[Able to state a substance for heating of naphthalene correctly]** Answer: Water// a*ir*	1	**1**
		(ii)	**[Able to state the change in temperature during melting of naphthalene correctly]** Sample answer: Temperature remains unchanged/ the same *Suhu kekal tidak berubah/ sama*	1	**1**
		(iii)	**[Able to give reason why the temperature of naphthalene remains unchanged during melting correctly]** Sample answer: 1. Heat energy absorbed// *Tenaga haba diserap* 2. To overcome the force/ intermolecular force of attraction between naphthalene particles/ molecules// *Untuk mengatasi daya tarikan/ daya tarikan antara zarah/ molekul naftalena*	1 1	**2**
	(b)	(i)	**[Able to state the type of particles in ammonium nitrate correctly]** Answer: Ion	1	**1**
		(ii)	**[Able to suggest a way to modify the experiment correctly]** Sample answer: Replace water with oil// *Menggantikan air dengan minyak*	1	**1**
		(iii)	**[Able to explain the reason correctly]** Sample answer: The melting point of ammonium nitrate is lower than the boiling point of oil// *Takat lebur ammonium nitrat lebih rendah daripada takat didih minyak*	1	**1**
	(c)	(i)	**[Able to draw the electron arrangement of X atom correctly]**		

[Lihat Halaman Sebelah

			Answer:  	1	
		(ii)	**[Able to write the standard representation of atom of element X]** Answer: $^{40}_{20}X$	1	**2**
				Total marks	**9**

No			Rubric	Mark	Total marks
3	(a)		**[Able to state the meaning of empirical formula correctly]** Answer: Chemical formula that shows the simplest whole number ratio of atoms of each element in the compound// *Formula kimia yang menunjukkan nisbah teringkas nombor bulat bagi atom setiap unsur dalam satu sebatian.*	1	**1**
	(b)		**[Able to write the chemical equation correctly]** 1. Correct formulae of reactants and products 2. Balanced equation Answer: $CuO + H_2 \rightarrow Cu + H_2O$	1 1	**2**
	(c)		**[Able to state one precaution step correctly]** Answer: Remove all air// Flow hydrogen gas a few minute to the combustion tube before heating. *Menyingkirkan udara// Alirkan gas hidrogen beberapa minit ke dalam tiub pembakaran sebelum pemanasan.*	1	**1**
	(d)		**[Able the determine the empirical formula of copper oxide correctly]**		

Answer:

Element	Cu	O
Mass (g) *Jisim*	56.66 – 53.46// 3.2	57.46 – 56.66// 0.8
Number of mole *Bilangan mol*	3.2/64// 0.05	0.8/16// 0.05
Simplest ratio of mol *Nisbah mol teringkas*	1	1
Empirical formula *Formula empirik*	CuO	

1
1
1 **3**

(e) **[Able to name another metal oxide correctly]**

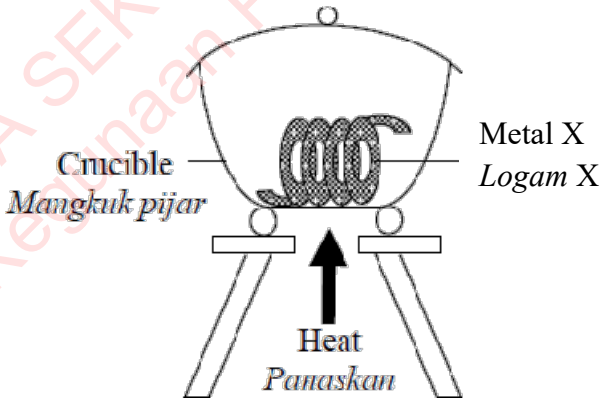
Sample answer:
Lead(II) oxide// *Plumbum*(II) *oksida*//
Silver oxide// *Argentum oksida*

1 **1**

(f) **[Able to draw a labelled diagram of apparatus set-up to determine the empirical formula for oxide of metal X correctly]**

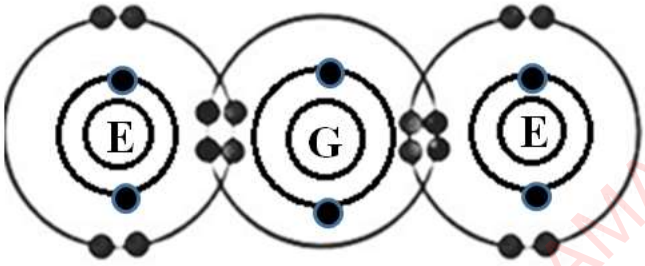
Sample answer:
1. Functional diagram
2. Label

1
1 **2**



Total marks **10**

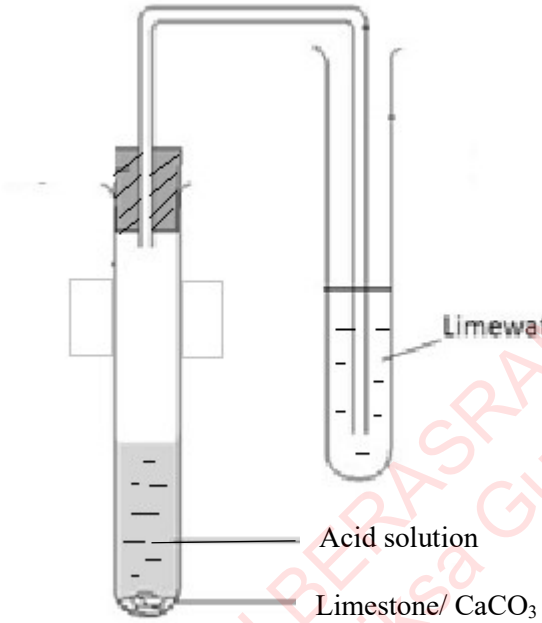
No			Rubric	Mark	Total marks
4	(a)		**[Able to state the basic principle used in arranging the elements in the Periodic Table correctly]** Answer: Increasing proton number// *Pertambahan nombor proton*	1	**1**
	(b)		**[Able to state a reason correctly]** Answer: Atom has two shells occupied with electrons// *Atom mempunyai dua petala terisi elektron*	1	**1**
	(c)	(i)	**[Able to write a balanced chemical equation for the reaction between element D and element G correctly]** 1. Correct formulae of reactants and products 2. Balanced equation Sample answer: $4D + G_2 \rightarrow 2D_2G$ // $4Li + O_2 \rightarrow 2Li_2O$	1 1	**2**
		(ii)	**[Able to explain why element J is more reactive than element D correctly]** Sample answer: 1. Atomic size of element J is bigger than D// *Saiz atom unsur* J *lebih besar daripada atom* D 2. Forces of attraction between nucleus and valence electron is weaker// *Daya tarikan antara nukleus dan elektron valens lebih lemah* 3. Easier for the atom J to release its valence electron// *Lebih mudah bagi atom* J *untuk melepaskan elektron valens*	1 1 1	**3**

	(d)	(i)	**[Able to draw the electron arrangement of the compound correctly]** 1. Shows the correct number of atoms, number of electrons and number of shells 2. Shows the correct number of electrons sharing between the atoms Answer:  	1 1	**2**
		(ii)	**[Able to explain why the compound does not conduct electricity in all states correctly]** Sample answer: Does not contain free moving ions// *Tidak mengandungi ion-ion bebas bergerak*// Exists as molecules// *wujud sebagai molekul*	1	**1**
				Total marks	**10**

No			Rubric	Mark	Total marks
5	(a)	(i)	**[Able to state the meaning of acid correctly]** Answer: Chemical substance that ionises in water to produce hydrogen/ hydroxonium ions/ H^+// *Bahan kimia yang mengion dalam air untuk menghasilkan ion hydrogen*/ hidroksonium/ H^+	1	**1**
		(ii)	**[Able to state the ion correctly]** Sample answer: Hydrogen ion//H^+// hydroxonium ion// H_3O^+// *Ion hidrogen*// *ion hidroksonium*	1	**1**

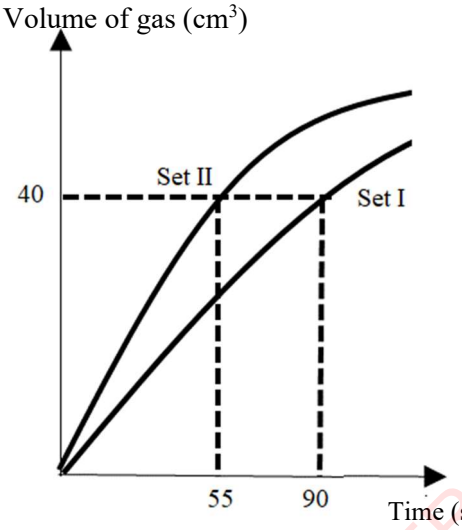
[Lihat Halaman Sebelah

		(iii)	**[Able to name acid P and acid Q correctly]** Sample answer: Acid P : Hydrochloric acid// nitric acid// *asid hidroklorik// asid nitrik* Acid Q : Sulphuric acid// *asid sulfurik*	 1 1	 **2**
		(iv)	**[Able to explain the difference in pH value correctly]** Sample answer: 1. Acid P ionises completely in water to produce high concentration of hydrogen ions// *asid* P *mengion lengkap dalam air untuk menghasilkan ion hidrogen dengan kepekatan yang tinggi* 2. Acid R ionises partially in water to produce low concentration of hydrogen ions// *asid* R *mengion separa dalam air untuk menghasilkan ion hidrogen dengan kepekatan yang rendah* 3. The higher the concentration of hydrogen ion, the lower the pH value// *Semakin tinggi kepekatan ion hidrogen, semakin rendah nilai pH*	 1 1 1	 **3**
	(b)	(i)	**[Able to explain the reaction correctly]** Sample answer: 1. Limestone/ calcium carbonate reacts with acid/ H^+// *Batu kapur/ kalsium karbonat bertindak balas dengan asid*/ H^+ 2. Carbon dioxide gas is released// *Gas karbon dioksida terbebas*	 1 1	 **2**

		(ii)	**[Able to draw the apparatus set-up correctly]** Sample answer: 1. Functional diagram 2. Label  	 1 1	 2
				Total marks	**11**

No			**Rubric**	**Mark**	**Total marks**
6	(a)		**[Able to state another measurable changes correctly]** Sample answer: Changes in mass of zinc// *Perubahan jisim zink*	 1	 **1**
	(b)		**[Able to identify the factor that affect the rate of reaction correctly]** Answer: Concentration of hydrochloric acid// *Kepekatan asid hidroklorik*	 1	 **1**

	(c)		**[Able to calculate the average rate of reaction for Set I and Set II correctly]** Answer: Set I = $\frac{40}{90}$ // 0.444 cm^3 s^{-1} Set II = $\frac{40}{55}$ // 0.727 cm^3 s^{-1}	1 1	2
	(d)	(i)	**[Able to compare the rate of reaction for Set I and Set II correctly]** Answer: The rate of reaction for Set II is higher// *Kadar tindak balas bagi* Set II *lebih tinggi*	1	1
		(ii)	**[Able to explain the differences with reference to Collision Theory correctly]** Sample answer: 1. Concentration of acid/ hydrochloric acid/ HCl in Set II is higher than Set I// *Kepekatan asid/ asid hidroklorik/* HCl *dalam Set* II *lebih tinggi daripada Set* I 2. The number of hydrogen ions/ H^+ ions per unit volume in Set II is higher// *Bilangan ion hidrogen/* H^+ *per unit isi padu dalam Set* II *lebih tinggi* 3. Frequency of collision between hydrogen ions/ H^+ and zinc atom in Set II is higher// *Frekuensi perlanggaran antara ion hidrogen/* H^+ *dan atom zink dalam Set* II *lebih tinggi* 4. Frequency of effective collision between particles in Set II is higher// *Frekuensi perlanggaran berkesan antara zarah dalam Set* II *lebih tinggi*	1 1 1 1	4

	(e)		**[Able to sketch a graph of correctly]** 1. Axes with correct unit 2. Curve with correct label at 40 cm^3, Set I & Set II Answer: Volume of gas (cm^3)  	1 1	**2**
				Total marks	**11**

SECTION B

No			Rubric	Mark	Total marks
7	(a)		**[Able to explain why magnesium chloride conducts electricity in molten state but not in solid state correctly]** Sample answer: 1. Magnesium chloride contains ions/magnesium ion and chloride ion// *Magnesium klorida mengandungi ion/ ion magnesium dan ion klorida* 2. in solid state, ions are in fixed position/not move freely// *Dalam keadaan pepejal, ion berada dalam keadaan tetap/ tidak bebas bergerak* 3. In molten state, ions are free to move// *Dalam keadaan leburan, ion bebas bergerak.* 4. Ions can carry the charge// *Ion boleh membawa cas*	1 1 1 1	**4**
	(b)	(i)	**[Able to choose the electrolyte correctly]** Answer: 1. Molten aluminium chloride// *Leburan aluminium klorida*	1	
		(ii)	**[Able to explain how the aluminium and chlorine are formed correctly]** Sample answer: 2. Aluminium ion and chloride ion are present in molten aluminium chloride// *Ion aluminium dan ion klorida hadir dalam leburan aluminium klorida* 3. Aluminium ion discharged at cathode// *Ion aluminium dinyahcas di katod* 4. Chloride ion discharge at anode// *Ion klorida dinyahcas di anod*	1 1 1	
		(iii)	**[Able to write the half equation at each electrode correctly]** Answer: 5. Cathode//*Katod* : $Al^{3+} + 3e^- \rightarrow Al$ 6. Anode//*Anod* : $2Cl^- \rightarrow Cl_2 + 2e^-$	1 1	**6**

	(c)		**[Able to compare between cell A and cell B correctly]** Answer:		

	Cell A ***Sel A***	**Cell B** ***Sel B***	
Type of cell *Jenis sel*	Electrolytic cell *Sel elektrolisis*	Voltaic/chemical cell// *Sel volta/ kimia*	1+1
Energy changes *Penukaran tenaga*	Electrical → chemical *Elektrik → kimia*	Chemical → electrical *Kimia → elektrik*	1+1
Half equation at anode *Setengah persamaan di anod*	$Zn \rightarrow Zn^{2+} + 2e^-$	$Mg \rightarrow Mg^{2+} + 2e^-$	1+1
Half equation at cathode *Setengah persamaan di katod*	$2H^+ + 2e^- \rightarrow H_2$	$2H^+ + 2e^- \rightarrow H_2$	1+1
Observation at anode *Pemerhatian di anod*	Zinc electrode becomes thinner *Elektrod zink menipis*	Magnesium electrode becomes thinner. *Elektrod magnesium menipis*	1+1

	Total marks	**20**

No			Rubric	Mark	Total marks
8	(a)	(i)	**[Able to state the oxidation number of iodine and its role correctly]** Answer: 1. -1 2. Reducing agent// *Agen penurunan*	 1 1	
		(ii)	**[Able to write the half equation correctly]** Answer : 3. $Br_2 + 2e \rightarrow 2Br^-$	 1	**3**
	(b)	(i)	**[Able to state the substance that is oxidised and reduced and explain correctly]** Sample answer: 1. Carbon dioxide undergoes reduction// *Karbon dioksida mengalami penurunan* 2. Carbon dioxide receives/gains hydrogen// *Karbon dioksida menerima hidrogen* 3. Water undergoes oxidation// *Air mengalami pengoksidaan* 4. Water releases/loses hydrogen // *Air kehilangan hidrogen*	 1 1 1 1	**4**
		(ii)	**[Able to calculate the volume of O_2 gas correctly]** Answer: 1. Number of mol of CO_2 2. Mole ratio 3. Volume of O_2 Number of mole// *Bilangan mol* $CO_2 = 270/24$ // 11.25 6 mole of CO_2 releases 6 mol of O_2 // 11.25 mol CO_2 *membebaskan* 11.25 mol O_2 Volume of O_2 gas//*Isi padu gas* O_2 $= 11.25 \times 24\ dm^3$ // $270\ dm^3$	 1 1 1	**3**

	(c)	(i)	**[Able to suggest P and Q correctly]** Sample answer: 1. P : Magnesium//Mg//Aluminium//Al//Zinc//*Zink*//Zn 2. Q : Silver//*Argentum*//Ag	1 1	
		(ii)	**[Able to explain the observation, state the substance oxidised and change in the oxidation number of copper for set I and Set II correctly]** Sample answer:		

Set I	**Set II**	
3. P is more reactive than copper// *P lebih reaktif daripada kuprum.*	4. Copper is more reactive than Q// *Kuprum lebih reaktif daripada Q*	1+1
5. P reduced copper(II) oxide to form copper// P *menurunkan kuprum* (II) *oksida membentuk kuprum* **Reject:** Displace *Menyesarkan*	6. Copper reduced Q oxide to form Q *Kuprum menurunkan Q oksida kepada Q*	1+1
7. Substance that is oxidised is magnesium/ Mg/aluminium/Al/zinc/ Zn *Bahan yang dioksidakan ialah magnesium*/Mg/ *aluminium*/Al/*Zink*/Zn	8. Substance that is oxidised is copper/Cu *Bahan yang dioksidakan ialah kuprum*/Cu	1+1
9. Change in oxidation number of copper// *Perubahan nombor pengoksidaan kuprum* : +2 to 0	10. Change in oxidation number of copper// *Perubahan nombor pengoksidaan kuprum* : 0 to +2	1+1 **10**

Total marks		**20**

SECTION C

[Lihat Halaman Sebelah

No			Rubric	Mark	Total marks
9	(a)		[**Able to identify the salt X correctly**] Answer: 1. Ammonium chloride// NH_4Cl// *ammonium klorida* **[Able to explain why moist blue litmus paper turns red correctly]** Sample answer: 2. Hydrogen chloride molecules ionise when in water// *molekul hidrogen klorida mengion dalam air* 3. to form hydrogen ion// *membentuk ion hidrogen/* H^+	1 1 1	**3**
	(b)	(i)	**[Able to suggest solution S correctly]** Answer: 1. K_2CO_3/ Potassium carbonate// *kalium karbonat*// Na_2CO_3/ sodium carbonate // *natrium karbonat* // $(NH_4)_2CO_3$/ Ammonium carbonate// *ammonium karbonat* [**Able to write the chemical equation for Reaction I correctly]** Sample answer: 2. Correct chemical formulae 3. Balanced equation Sample answer: $K_2CO_3 + Pb(NO_3)_2 \rightarrow PbCO_3 + 2KNO_3$// $Na_2CO_3 + Pb(NO_3)_2 \rightarrow PbCO_3 + 2NaNO_3$// $(NH_4)_2CO_3 + Pb(NO_3)_2 \rightarrow PbCO_3 + 2NH_4NO_3$// **[Able to calculate the maximum mass of $PbCO_3$ correctly]** 4. Number of mol of K_2CO_3 5. Number of mol of $Pb(NO_3)_2$ 6. Mole ratio 7. Maximum mass of $PbCO_3$ Sample answer:	1 1 1 1 1 1 1 1 1 1	**7**

[Lihat Halaman Sebelah

			No of mole of K_2CO_3// CO_3^{2-} = 50 x 1.0 // 1000 = 0.05 mol No of mole of $Pb(NO_3)_2$ // Pb^{2+} = 100 x 0.2 // 1000 = 0.02 mol Based on equation: 1 mol of Pb^{2+}/ $Pb(NO_3)_2$ react with 1 mol of CO_3^{2-}/ K_2CO_3 to form 1 mol of $PbCO_3$ 0.02 mol of Pb^{2+} / $Pb(NO_3)_2$ react with 0.02 mol of CO_3^{2-} / K_2CO_3 to form 0.02 mol of $PbCO_3$// 1 mol of Pb^{2+}/ $Pb(NO_3)_2$: 1 mol of CO_3^{2-}/ K_2CO_3 : 1 mol of $PbCO_3$ 0.02 mol of Pb^{2+} / $Pb(NO_3)_2$: 0.02 mol of CO_3^{2-}/ K_2CO_3: 0.02 mol of $PbCO_3$ Maximum mass of $PbCO_3$ = 0.02 x 267 = 5.34 g		
		(ii)	**[Able to write a balanced chemical equation for Reaction II correctly]** 1. Correct chemical formulae 2. Balanced equation $PbCO_3 + 2HNO_3 \rightarrow Pb(NO_3)_2 + CO_2 + H_2O$ **[Able to describe a laboratory experiment to prepare salt T correctly]** 3. Measure and pour [20 - 100] cm^3 of [0.1 - 1.0] mol dm^{-3} nitric acid into a beaker// *Ukur dan tuang* [20 - 100] cm^3 *asid nitrik* [0.1 - 1.0] mol dm^{-3} *ke dalam bikar* 4. Heat the nitric acid slowly// *Panaskan asid nitrik dengan perlahan* 5. Add lead(II) carbonate powder into the acid until in excess// *Tambahkan serbuk plumbum*(II) *karbonat ke dalam asid sehingga berlebihan* 6. Stir the mixture//*kacau campuran* 7. Filter the mixture // *turaskan campuran*	1 1 1 1 1 1 1	

			8. Transfer the filtrate into an evaporating dish and heat the filtrate until saturated// *Pindahkan hasil turasan ke dalam mangkuk pijar dan panaskan hasil turasan sehingga tepu* 9. Cool the saturated solution and filter again// *Sejukkan larutan yang tepu itu dan turaskan sekali lagi* 10. Dry the crystal by press it in between filter papers// *Keringkan hablur dengan menekannya antara beberapa keping kertas turas*	1 1 1	**10**
				Total marks	**20**

No			Rubric	Mark	Total marks

10	(a)		**[Able to explain how the glass tube can detect whether the driver is drunk or not correctly]**
			[Able to justify whether the method is effective or not to detect drunken driver correctly]
			
			Sample answer:
			
			1. Acidified potassium dichromate(VI) solution in the glass tube change from orange to green if the driver is drunk//
			If the orange colour of potassium dichromate(VI) solution remain unchanged, the driver is not drunk
			Larutan kalium dikromat berasid(VI) *di dalam tiub kaca bertukar dari jingga kepada hijau jika pemandu mabuk//*
			jika warna jingga kalium dikromat(VI) kekal tidak berubah, pemandu tidak mabuk
			
			2. Alcohol/ ethanol reacts with acidified potassium dichromate(VI)// Oxidation of alcohol occurs
			Alkohol/ etanol bertindak balas dengan larutan kalium dikromat(VI) berasid//
			pengoksidaan alkohol berlaku
			3. This method is effective// *Kaedah ini berkesan*
			4. Can quickly detect drunken driver (or any suitable answer.
			Boleh mengesan pemandu mabuk dengan cepat (*atau sebarang jawapan yang sesuai*)
			
			OR
			3. This method is not effective// *Kaedah ini tidak berkesan*
			4. Cannot detect the alcohol level in the breath of the driver accurately (or any suitable answer)//
			Tidak boleh mengesan tahap alkohol dalam nafas pemandu dengan tepat (atau sebarang jawapan yang sesuai)
				1
				
				1
				
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					4

<table>
<tr>
<td></td>
<td>(b)</td>
<td>(i)</td>
<td>[Able to identify functional group and molecular formula for compound P, Q and R correctly]

Sample answer:

<table>
<tr><th>Compound</th><th>Functional group</th><th>Molecular formula</th></tr>
<tr><td>P</td><td>Hydroxyl
//hidroksil //
-OH</td><td>C_2H_5OH //
C_3H_7OH</td></tr>
<tr><td>Q</td><td>Carboxyl//
Karboksil //
-COOH</td><td>CH_3COOH //
C_2H_5COOH</td></tr>
<tr><td>R</td><td>Double bond between carbon atoms// ikatan ganda dua antara atom-atom karbon
//C=C</td><td>C_2H_4 //
C_3H_6</td></tr>
</table>
[Note: the number of carbon atom for each compound must be the <u>same</u>]</td>
<td>1+1

1+1

1+1</td>
<td>6</td>
</tr>
<tr>
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<td>(iii)</td>
<td>[Able to describe an experiment to produce compound U and the chemical test for the compound formed correctly]

Sample answer:
1. Compound U is ethyl ethanoate// propyl propanoate//
Sebatian U adalah etil etanoat//propil propanoat
2. Measure and pour [2-3] cm^3 of compound P/ ethanol/ propanol into a boiling tube
Sukat dan tuangkan [2-3] cm^3 sebatian P / etanol/propanol ke dalam tabung didih
3. Add [2-3] cm^3 of compound Q/ ethanoic acid/ propanoic acid
Tambahkan [2-3] cm^3 sebatian Q/asid etanoik/ asid propanoik
4. Add a few drops of concentrated sulphuric acid
Tambahkan beberapa titis asid sulfurik pekat
5. Heat the mixture gently</td>
<td>1

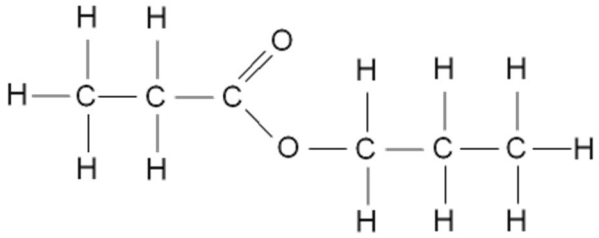
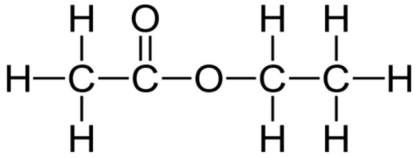
1

1

1

1</td>
<td></td>
</tr>
</table>

[Lihat Halaman Sebelah

			Panaskan campuran secara perlahan 6. Sweet smell is produced *Bau harum dihasilkan* 7. Structural formula: *Formula struktur*  // 	1 1	**7**
		(iii)	**[Able to describe how compound R can be converted into compound P correctly]** Sample answer: 1. Flow gas R/ ethene/ propene// *Alirkan gas* R/ *etena /propena* 2. Into the steam *Ke dalam stim* 3. At temperature 300ºC // pressure 60 atm // concentrated phosphoric acid as catalyst// *pada suhu* 300ºC // *tekanan* 60 atm// *asid fosforik pekat sebagai mangkin*	 1 1 1	**3**
				Total marks	**20**

END OF MARK SCHEME FOR PAPER 2

MARKING SCHEME CHEMISTRY PAPER 3

	RUBRIC	SCORE
1(a)	**[Identify variables]** **Able to state all three variables correctly** ***Boleh menyatakan ketiga-tiga pemboleh ubah dengan betul*** **Sample answer:** Manipulated variable : Type of alkali *Pemboleh ubah dimanipulasi : Jenis alkali* Responding variable : Heat of neutralisation *Pemboleh ubah bergerakbalas : Haba peneutralan* Constant variable : Polystyrene cup // Concentration and volume of potassium hydroxide solution *Pemboleh ubah dimalarkan : Cawan polistirena //* *Kepekatan dan isipadu larutan kalium hidroksida*	3
	Able to state any two variables correctly ***Boleh menyatakan mana-mana dua pemboleh ubah dengan betul***	2
	Able to state any one variable correctly ***Boleh menyatakan mana-mana satu pemboleh ubah dengan betul***	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

	RUBRIC	SCORE
1(b)	**[Making hypothesis]** **Able to state the relationship between manipulated variable and responding variable with direction correctly** ***Boleh untuk menyatakan perhubungan antara pemboleh ubah dimanipulasi dan pemboleh ubah bergerakbalas dengan arah yang betul*** Sample answer : The reaction between a strong acid and strong alkali produce a greater heat of neutralisation than the reaction between a strong acid and weak alkali.// *Tindak balas antara asid kuat dan alkali kuat menghasilkan haba peneutralan yang lebih tinggi daripada tindak balas di antara asid kuat dan alkali lemah//* The reaction between hydrochloric acid and potassium hydroxide solution produce a greater heat of neutralisation than the reaction between hydrochloric acid and ammonia solution *Tindak balas antara asid hidroklorik dan larutan kalium hidroksida menghasilkan haba peneutralan yang lebih tinggi daripada tindak balas di antara asid hidroklorik dan larutan ammonia*	3
	Able to state the relationship between one type of alkali with the responding variable ***Boleh menyatakan perhubungan di antara satu jenis alkali dengan pemboleh ubah bergerakbalas*** Sample answer : The reaction between a strong acid and strong alkali produce a greater heat of neutralisation// *Tindak balas antara asid kuat dan alkali kuat menghasilkan haba peneutralan yang lebih tinggi //* The reaction between hydrochloric acid and potassium hydroxide solution produce a greater heat of neutralisation// *Tindak balas antara asid hidroklorik dan larutan kalium hidroksida menghasilkan haba peneutralan yang lebih tinggi*	2
	Able to state an idea of the hypothesis ***Boleh menyatakan idea hipotesis*** Sample answer : Heat of neutralisation changes / increase *Haba peneutralan berubah / meningkat*	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

	RUBRIC	SCORE
1(c)	**[Record reading]** **Able to record all the temperature accurately with one decimal place.** ***Boleh merekodkan semua suhu dengan jitu dengan satu titik perpuluhan.*** Sample answer : Experiment 1 Initial temperature of hydrochloric acid = 28.0 *Suhu awal asid hidroklorik* Initial temperature of potassium hydroxide solution = 28.0 *Suhu awal larutan kalium hidroksida* Highest temperature of mixture = 41.0 *Suhu tertinggi campuran* Temperature change = 13.0 *Perubahan suhu* Experiment II Initial temperature of hydrochloric acid = 28.0 *Suhu awal asid hidroklorik* Initial temperature of ammonia solution = 28.0 *Suhu awal larutan ammonia* Highest temperature of mixture = 39.0 *Suhu tertinggi campuran* Temperature change = 11.0 *Perubahan suhu*	3
	Able to record all the temperature correctly without one decimal place ***Boleh merekodkan semua suhu dengan betul tanpa satu tempat perpuluhan***	2
	Able to record any four temperatures correctly. ***Boleh merekodkan mana-mana empat suhu dengan betul.***	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

<table>
<tr><th></th><th>RUBRIC</th><th>SCORE</th></tr>
<tr><td>1(d)</td><td>
[Tabulating data]
Able to construct a table accurately with the following aspects:
(i) Three columns with correct quantities and unit;
(ii) Correct all readings of thermometer with one decimal place
Boleh membina jadual dengan jitu mengikut aspek berikut :
(i) Tiga lajur dengan kuantiti dan unit yang betul
(ii) Semua bacaan suhu betul dengan satu titik perpuluhan
Answer :
<table>
<tr><td>Experiment
Eksperimen</td><td>I</td><td>II</td></tr>
<tr><td>Initial temperature of acid, °C
Suhu awal asid, °C</td><td>28.0</td><td>28.0</td></tr>
<tr><td>Initial temperature of alkali solution, °C
Suhu awal alkali, °C</td><td>28.0</td><td>28.0</td></tr>
<tr><td>Highest temperature of mixture, °C
Suhu tertinggi campuran, °C</td><td>41.0</td><td>39.0</td></tr>
<tr><td>Change of temperature, °C
Perubahan suhu, °C</td><td>13.0</td><td>11.0</td></tr>
</table>
</td><td>3</td></tr>
<tr><td></td><td>
Able to construct a less accurate table that contains:
1 Titles without unit
2 All readings
Boleh membina jadual kurang tepat yang mengandungi :
1. Tajuk tanpa unit
2. Semua bacaan suhu
Sample answer:
<table>
<tr><td>Experiment
Eksperimen</td><td>I</td><td>II</td></tr>
<tr><td>Initial temperature of acid
Suhu awal asid</td><td>28</td><td>28</td></tr>
<tr><td>Initial temperature of alkali solution
Suhu awal alkali</td><td>28</td><td>28</td></tr>
<tr><td>Highest temperature of mixture
Suhu tertinggi campuran</td><td>41</td><td>39</td></tr>
<tr><td>Change of temperature
Perubahan suhu</td><td>13</td><td>11</td></tr>
</table>
</td><td>2</td></tr>
<tr><td></td><td>Able to construct a table with at least two title
Boleh membina jadual dengan sekurang-kurangnya dua tajuk</td><td>1</td></tr>
<tr><td></td><td>No response or wrong response.
Tiada jawapan atau jawapan salah.</td><td>0</td></tr>
</table>

<table>
<tr><th></th><th>RUBRIC</th><th>SCORE</th></tr>
<tr><td>1(e)</td><td>[Making observations and inferences]
Able to state 3 observations and 3 respective inferences correctly
Boleh menyatakan 3 pemerhatian dan 3 inferens yang sepadan dengan betul

<table>
<tr><th></th><th>Observation
Pemerhatian</th><th>Inference
Inferens</th></tr>
<tr><td>1</td><td>Temperature / thermometer reading increase//
polystyrene cup becomes warmer / hot
Suhu / bacaan thermometer meningkat//
Cawan polistirena menjadi panas</td><td>Exothermic reaction//
heat released
Tindak balas eksotermik//
Haba dibebaskan</td></tr>
<tr><td>2</td><td>The pungent smell of ammonia solution disappear
Bau sengit larutan ammonia hilang</td><td>Ammonia solution is neutralised
Larutan ammonia telah dineutralkan</td></tr>
<tr><td>3</td><td>No change in the colour of solution//
A colourless solution is obtained//
Volume of the mixture increases //
Tiada perubahan pada warna larutan//
Larutan tidak berwarna terbentuk //
Isi padu campuran bertambah</td><td>Salt and water formed // Salt solution is formed //
Garam dan air terhasil //
Larutan garam terbentuk</td></tr>
</table></td><td>6</td></tr>
<tr><td></td><td>Able to state 3 observations and 2 respective inferences correctly
Boleh menyatakan 3 pemerhatian dan mana-mana 2 inferens yang sepadan dengan betul</td><td>5</td></tr>
<tr><td></td><td>Able to state 3 observations and 1 respective inference correctly//
Able to state any 2 observations and 2 respective inferences correctly
Boleh menyatakan 3 pemerhatian dan 1 inferens yang sepadan dengan betul// Boleh menyatakan mana-mana 2 pemerhatian dan 2 inferens yang sepadan dengan betul</td><td>4</td></tr>
<tr><td></td><td>Able to state 3 observations correctly//
Able to state any 2 observations and 1 respective inference correctly
Boleh menyatakan 3 pemerhatian dengan betul//
Boleh menyatakan mana-mana 2 pemerhatian dan 1 inferens yang sepadan dengan betul</td><td>3</td></tr>
<tr><td></td><td>Able to state any 2 observations correctly//
Able to state any 1 observation and 1 respective inference correctly
Boleh menyatakan mana-mana 2 pemerhatian dengan betul// Boleh menyatakan mana-mana 1 pemerhatian dan 1 inferens yang sepadan dengan betul</td><td>2</td></tr>
<tr><td></td><td>Able to state any 1 observation correctly
Boleh menyatakan mana-mana 1 pemerhatian dengan betul</td><td>1</td></tr>
<tr><td></td><td>No response or wrong response
Tiada jawapan atau jawapan salah</td><td>0</td></tr>
</table>

	RUBRIC	SCORE
1(f)	**[Define operationally]** **Able to state the operational definition for the heat of neutralisation correctly. Able to describe the following criteria** **(i) What do you do : Acid is added into alkali solution to produce 1 mol of water** **(ii) What do you observed : temperature rises** ***Boleh menyatakan definasi secara operasi bagi haba peneutralan dengan betul. Boleh menghuraikan kriteria berikut:*** ***(i) Apa yang anda lakukan : Asid ditambahkan ke dalam larutan alkali untuk menghasilkan 1 mol air*** ***(ii) Apa yang anda perhatikan : Suhu meningkat*** Sample answer : The temperature rises when acid is added into alkali solution to produce **1 mol of water** *Suhu meningkat apabila asid dimasukkan ke dalam larutan alkali untuk menghasilkan* ***1 mol air***	3
	Able to state the operational definition incompletely// ***Able to state either criteria (i) or (ii)*** ***Boleh menyatakan definisi secara operasi dengan tidak lengkap//*** ***Boleh menyatakan salah satu kriteria (i) atau (ii)*** *Sample answer:* Temperature rises when acid is added into alkali solution// Temperature rises// Acid is added into alkali solution to produce 1 mol of water *Suhu meningkat apabila asid dimasukkan ke dalam larutan alkali //* *Suhu meningkat//* *Asid dimasukkan ke dalam larutan alkali untuk menghasilkan 1 mol air*	2
	Able to state the idea of the heat of neutralisation ***Boleh menyatakan idea haba peneutralan*** *Sample answer :* 1 mol of water produced // Heat changes // Reaction between acid and alkali *1 mol air terbentuk //* *Perubahan haba //* *Tindak balas antara asid dan alkali*	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

	RUBRIC	SCORE
1(g)	**[Interpreting data]** **Able to calculate the heat of neutralisation for experiment I correctly with unit** ***Boleh menghitung haba peneutralan bagi eksperimen* I *dengan betul dan berunit*** **Sample answer :** **Step 1** : Heat released = mcΘ = 100 g x 4.2 J g^{-1} $^oC^{-1}$ x 13^{o}C // 5460 J **Step 2** : Number of mole of potassium hydroxide = MV/1000 = 2.0 mol dm^{-3} x 0.05 dm^3// 0.1 mol **Step 3** : 0.1 mol of potassium hydroxide produces 0.1 mol of water **Step 4** : Heat of neutralisation = - heat released / number of mole = (- 5460 J / 0.1 mol) // - 54600 J mol^{-1}// - 54.6 kJ mol^{-1}	3
	Able to calculate the heat of neutralisation for experiment I without unit or -ve sign. **Able to calculate the heat of neutralisation for experiment I correctly with the following steps : Step 1, 2 and 4.** ***Boleh mengira haba peneutralan untuk eksperimen* I *tanpa unit atau tanda – ve.*** ***Boleh mengira haba peneutralan untuk eksperimen* I *dengan betul mengikut langkah-langkah berikut : Langkah* 1, 2 *dan* 4.**	2
	Able to state the idea of calculation of heat of neutralisation (any 2 steps) ***Boleh menyatakan idea pengiraan haba peneutralan (Mana-mana* 2 *langkah)***	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

	RUBRIC	SCORE
1(h)	**[Predict]** **Able to predict the temperature change accurately with a correct unit** ***Boleh meramalkan perubahan suhu dengan tepat dengan unit yang betul*** Sample answer : [9 – 10]°C	3
	Able to predict the temperature change without unit. ***Boleh meramalkan perubahan suhu tanpa unit.*** Sample answer : 9 – 10// Less than 11°C// *Kurang daripada 11*°C	2
	Able to give an idea to predict the temperature. ***Boleh memberi idea untuk meramalkan suhu.*** Sample answer : [7 > x < 9]°C	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

	RUBRIC	SCORE
1(i)	**[State the relationship]** **Able to state the relationship between type of alkali and heat of neutralisation correctly.** ***Boleh menyatakan hubungan di antara jenis alkali dan haba peneutralan dengan betul.*** Sample answer : The heat of neutralisation of nitric acid and strong alkali is higher than the heat of neutralisation of nitric acid and weak alkali // *Haba peneutralan asid nitrik dan alkali kuat lebih tinggi daripada haba peneutralan asid nitrik dan alkali lemah//* The heat of neutralisation of nitric acid and potassium hydroxide solution is higher than the heat of neutralisation of nitric acid and ammonia solution // *Haba peneutralan asid nitrik dan larutan kalium hidroksida lebih tinggi daripada haba peneutralan asid nitrik dan larutan ammonia*	3
	Able to state the relationship between one type of alkali with heat of neutralisation. ***Boleh menyatakan perhubungan antara satu jenis alkali dengan haba peneutralan.*** Sample answer : The heat of neutralisation of strong acid and strong alkali is higher than the heat of neutralisation of strong acid and weak alkali // *Haba peneutralan asid kuat dan alkali kuat lebih tinggi daripada haba peneutralan asid kuat dan alkali lemah//* The heat of neutralisation of strong acid and strong alkali is greater// *Haba peneutralan asid kuat dan alkali kuat lebih tinggi//* The heat of neutralisation of hydrochoric acid and potassium hydroxide is greater// *Haba peneutralan asid hidroklorik dan kalium hidroksida lebih tinggi*	2
	Able to state the idea of the relationship between type of acid and heat of neutralisation. ***Boleh menyatakan idea bagi hubungan atara jenis alkali dengan haba peneutralan.***	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

<table>
<tr><th></th><th>RUBRIC</th><th>SCORE</th></tr>
<tr><td>1(j)</td><td>[Classify]
Able to classify the alkalis into alkali that ionise completely in water and alkali that ionise partially in water.
Boleh mengelaskan alkali kepada alkali yang mengion lengkap dalam air dan alkali yang mengion separa dalam air

Sample answer :

<table>
<tr><th>Alkali that ionise completely in water
Alkali yang mengion lengkap dalam air</th><th>Alkali that ionise partially in water
Alkali yang mengion separa dalam air</th></tr>
<tr><td>W</td><td>X</td></tr>
<tr><td>Z</td><td>Y</td></tr>
</table>

Score 1 if classification is reverse
Skor 1 jika pengelasan terbalik</td><td>3</td></tr>
<tr><td></td><td>Able to classify at least 3 alkali correctly
Boleh mengelaskan sekurang-kurangnya 3 alkali dengan betul</td><td>2</td></tr>
<tr><td></td><td>Able to classify at least 2 alkali correctly
Boleh mengelaskan sekurang-kurangnya 2 alkali dengan betul</td><td>1</td></tr>
<tr><td></td><td>No response or wrong response
Tiada jawapan atau jawapan salah</td><td>0</td></tr>
</table>

	RUBRIC	SCORE
2(a)	**Able to state the problem statement correctly** ***Boleh menyatakan pernyataan masalah dengan betul*** Sample answer : Does different concentration of sodium chloride solution affect the product formed at anode?// *Adakah kepekatan larutan natrium klorida yang berlainan mempengaruhi hasil di anod*?// Does dilute sodium chloride solution produce oxygen gas at anode **AND** concentrated sodium chloride solution produce chlorine gas at anode? *Adakah larutan natrium klorida cair menghasilkan gas oksigen di anod* ***DAN*** *larutan natrium klorida pekat menghasilkan gas klorin di anod*?	3
	Able to state the problem statement less correctly ***Boleh menyatakan pernyataan masalah kurang betul*** Sample answer : Does different concentration of sodium chloride solution affect the product formed at electrode? // *Adakah kepekatan larutan natrium klorida berlainan mempengaruhi hasil di elektrod*?// Does dilute sodium chloride solution produce oxygen gas at anode? // *Adakah larutan natrium klorida cair menghasilkan gas oksigen di anod*? // Does concentrated sodium chloride solution produce chlorine gas at anode? *Adakah larutan natrium klorida pekat menghasilkan gas klorin di anod*?	2
	Able to give an idea of problem statement ***Boleh memberikan idea pernyataan masalah*** Sample answer : Concentration affect the product formed. *Kepekatan mempengaruhi hasil yang terbentuk*	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

	RUBRIC	SCORE
2(b)	**Able to state all the variables correctly** ***Boleh menyatakan semua pembolehubah dengan betul*** Sample answer Manipulated variable : Concentration of sodium chloride solution *Pembolehubah dimanipulasi* : *kepekatan larutan natrium klorida* Responding variable : Product formed at anode // *Pembolehubah bergerakbalas* : *hasil terbentuk di anod* Fixed variable : Sodium chloride solution // Type of electrode // *Pembolehubah dimalarkan* : *larutan natrium klorida //* *Jenis elektrod*	3
	Able to state any two variables correctly ***Boleh menyatakan mana-mana dua pembolehubah dengan betul***	2
	Able to state any one variable correctly ***Boleh menyatakan mana-mana satu pembolehubah dengan betul***	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

	RUBRIC	SCORE
2(c)	**Able to state the relationship between the manipulated variable and the responding variable and state the direction correctly.** ***Boleh menyatakan perhubungan antara pembolehubah dimanipulasi dan pembolehubah bergerak balas dan menyatakan arah dengan betul*** Sample answer : If concentrated sodium chloride solution is used, chlorine gas produced at anode **AND** if dilute sodium chloride solution is used, oxygen gas produced at anode// *Jika larutan natrium klorida pekat digunakan, gas klorin dihasilkan di anod dan jika larutan natrium klorida cair digunakan, gas oksigen dihasilkan di anod*	3
	Able to state the relationship between the manipulated variable and the responding variable ***Boleh menyatakan perhubungan antara pembolehubah dimanipulasi dan pembolehubah bergerak balas*** Sample answer : If concentrated sodium chloride solution is used, chlorine gas produced at anode // *Jika larutan natrium klorida pekat digunakan, gas klorin dihasilkan di anod //* If dilute sodium chloride solution is used, oxygen gas produced at anode // *Jika larutan natrium klorida cair digunakan, gas oksigen dihasilkan di anod //* If concentrated sodium chloride solution is used, gas turns moist blue litmus paper to red and then bleached is produced at anode **AND** if dilute sodium chloride solution is used, gas ignite the glowing wooden splinter is produced at anode. *Jika larutan natrium klorida pekat digunakan, gas yang menukarkan kertas litmus biru lembap kepada merah dan kemudian dilunturkan di anod dan jika larutan natrium klorida cair digunakan, gas yang menyalakan kayu uji berbara dihasilkan di anod*	2
	Able to state an idea of hypothesis ***Boleh menyatakan idea hipotesis*** Sample answer : Different concentration of electrolyte used will produce different product at anode.// *Kepekatan elektrolit berbeza digunakan menghasilkan hasil berbeza di* anod // Different concentration of solution will produce different product at anod// *Kepekatan larutan berbeza hasilkan produk berbeza di anod*	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

	RUBRIC	SCORE
2(d)	**Able to list all the materials and apparatus completely** ***Boleh menyenaraikan semua bahan dan radas dengan lengkap*** Sample answer : <u>List of materials</u> 1. Concentrated sodium chloride solution // 1.0 mol dm^{-3} sodium chloride solution *Larutan natrium klorida pekat //* *Larutan natrium klorida 1.0 mol dm^{-3}* 2. Dilute sodium chloride solution // 0.001 dm^{-3} sodium chloride solution *Larutan natrium klorida cair //* *Larutan natrium klorida 0.001 mol dm^{-3}* 3. Wooden splinter *Kayu uji* 4. Blue litmus paper *Kertas litmus biru* <u>List of apparatus</u> 5. Battery *Bateri* 6. Electrolytic cell *Sel elektrolisis* 7. Connecting wire *Wayar penyambung* 8. Test tube *Tabung uji* **9.** Carbon elektrod *Elektrod karbon*	3
	Able to list the following materials and apparatus. ***Boleh menyenaraikan bahan dan radas berikut*** Sample answer : 1. Concentrated sodium chloride solution // 1.0 mol dm^{-3} sodium chloride solution *Larutan natrium klorida pekat //* *Larutan natrium klorida* 1.0 mol dm^{-3} 2. Dilute sodium chloride solution // 0.001 dm^{-3} sodium chloride solution *Larutan natrium klorida cair //* *Larutan natrium klorida* 0.001 mol dm^{-3} 3. Wooden splinter *Kayu uji* 4. Battery *Bateri* 5. [Any suitable container] *[bekas yang sesuai]*	2

	6. Connecting wire *Wayar penyambung* 7. Carbon elektrod *Karbon elektrod*	
	Able to list the following materials and apparatus. ***Boleh menyenaraikan bahan dan radas*** 1. Sodium chloride solution *Larutan natrium klorida* 2. [Any suitable container] *[sebarang bekas sesuai]* 3. Battery *Bateri* *4.* Carbon elektrod *Elektrod karbon*	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

	RUBRIC	SCORE
2(e)	**Able to state all the steps of experiment correctly** ***Boleh menyatakan semua langkah eksperimen dengan betul*** Sample answers : 1. Fill the electrolytic cell with concentrated sodium chloride solution until half full. *Isikan sel elektrolitik dengan larutan natrium klorida pekat hingga separuh penuh.* 2. Invert a test tube filled with concentrated sodium chloride solution on the **anode**. *Telangkupkan tabung uji yang berisi larutan natrium klorida pekat pada anod.* 3. Connect the electrodes to the battery using connecting wire. Sambungkan elektrod kepada bateri menggunakan wayar penyambung. 4. Complete the circuit. *Lengkapkan litar* 5. Collect and test the gas released at the anode *Kumpulkan dan ujikan gas yang terbebas di anod* 6. Record the observation. *Rekodkan pemerhatian.* 7. Repeat step 1 - 6 by using dilute sodium chloride solution. *Ulangi langkah* 1 – 6 *dengan menggunakan larutan natrium klorida cair.*	3
	Able to state steps 1, 3, 6 and 7 ***Boleh menyatakan langkah 1, 3, 6 dan 7***	2
	Able to state idea of procedure for electrolysis [step 1 and 3] *Boleh menyatakan idea prosedur elektrolisis* [*langkah* 1 *dan* 3]	1
	No response or wrong response ***Tiada jawapan atau jawapan salah***	0

<table>
<tr><th></th><th>RUBRIC</th><th>SCORE</th></tr>
<tr><td>2(f)</td><td>Able to tabulate the data with the following aspects
Boleh menjadualkan data dengan aspek berikut

1. Correct headings
Tajuk betul
2. List of the concentration of sodium chloride solution
Senarai kepekatan kepekatan larutan natrium klorida

Sample answer
<table><tr><td>Concentration of sodium chloride solution (mol dm^{-3})
<i>Kepekatan larutan natrium klorida</i> (mol dm^{-3})</td><td>Observation
Pemerhatian</td></tr><tr><td>1.0</td><td></td></tr><tr><td>0.001</td><td></td></tr></table>or<table><tr><td>Sodium chloride solution
Larutan natrium klorida</td><td>Observation
Pemerhatian</td></tr><tr><td>Concentrated
Pekat</td><td></td></tr><tr><td>Dilute
Cair</td><td></td></tr></table></td><td>2</td></tr>
<tr><td></td><td>Able to tabulate the data

Sample answer
1. One correct headings or list of concentration of sodium chloride solution
<table><tr><td>Concentration (mol dm^{-3})
Kepekatan (mol dm^{-3})</td><td>Observation
Pemerhatian</td></tr><tr><td></td><td></td></tr></table></td><td>1</td></tr>
<tr><td></td><td>No response or wrong response
Tiada jawapan atau jawapan salah</td><td>0</td></tr>
</table>

END OF MARKING SCHEME

PERATURAN PEMARKAHAN TAMAT