

SULIT



NAMA

KELAS

JABATAN PENDIDIKAN NEGERI PULAU PINANG

LATIH TUBI SET 1
KIMIA SPM
Kertas 2

4541/2

$2\frac{1}{2}$ jam

Dua jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. Tuliskan **Nama dan kelas** pada ruangan yang disediakan.
2. Kertas soalan ini mengandungi **TIGA bahagian** iaitu **Bahagian A, B dan C**.
3. Jawab semua soalan **Bahagian A dan C** dan **satu** soalan daripada **Bahagian B**.
4. Ikat kertas jawapan dengan benang yang disediakan.

| Untuk kegunaan pemeriksa | | | |
|--------------------------|--------------|----|------------------|
| Bahagian | Markah penuh | | Markah diperoleh |
| A | 1 | 5 | |
| | 2 | 5 | |
| | 3 | 6 | |
| | 4 | 7 | |
| | 5 | 8 | |
| | 6 | 9 | |
| | 7 | 10 | |
| | 8 | 10 | |
| B | 9 | 20 | |
| | 10 | 20 | |
| C | 11 | 20 | |
| Jumlah | 100 | | |

Kertas ini mengandungi 22 halaman bercetak.

4541/2

{Lihat halaman sebelah
SULIT

Bahagian A
Section A

[60 markah]

[60 marks]

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

1. (a) Jadual 1 menunjukkan tiga bahan dan formula kimia masing-masing.
Table 1 shows three substances and their respective chemical formulae.

| Nama bahan <i>Name of substance</i> | Formula kimia/ <i>Chemical formula</i> |
|---|--|
| Bromin <i>Bromine</i> | Br₂ |
| Plumbum <i>Lead</i> | Pb |
| Plumbum(II) bromida <i>Lead (II) bromide</i> | PbBr₂ |

Jadual 1 / Table 1

Gunakan maklumat daripada Jadual 1 untuk menjawab soalan-soalan berikut:

Use information from Table 1 to answer the following questions:

- (i) Nyatakan **satu** bahan yang wujud sebagai atom.

*State **one** substance which exists as an atom.*

.....

[1 markah / mark]

- (ii) Tulis formula ion bagi bahan di (a) (i).

Write the ionic formula for the substance in (a) (i).

.....

[1 markah / mark]

- (iii) Bahan yang manakah mempunyai takat lebur paling rendah?

Which substance has the lowest melting point?

.....

[1 markah / mark]

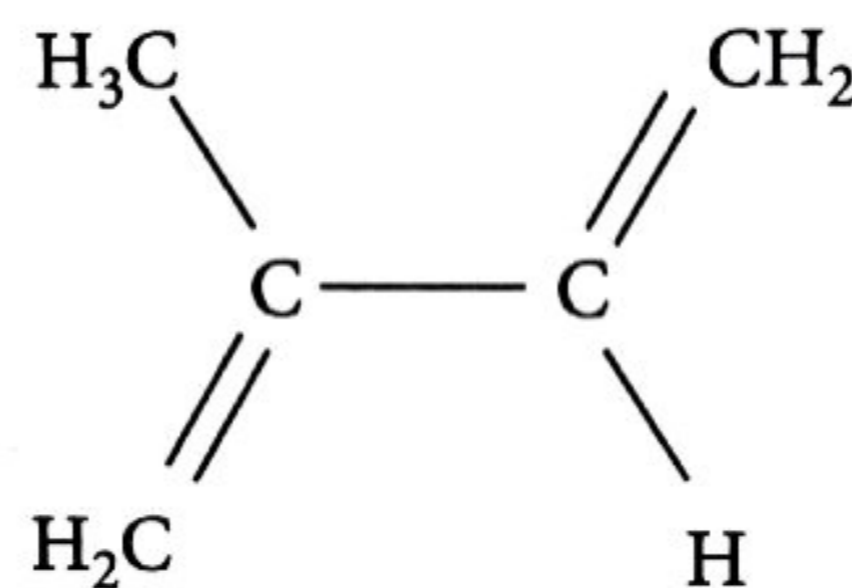
- (iv) Apakah keadaan jirim bromin pada suhu bilik?
What is the state of matter of bromine at room temperature?

.....
[1 markah / mark]

- (v) Plumbum(II) bromida boleh mengalirkan elektrik dalam keadaan leburan. Berikan satu sebab.
Lead (II) bromide can conduct electricity in molten state. Give a reason.

.....
[1 markah / mark]

2. (a) Rajah 2.1 menunjukkan formula struktur bagi monomer getah asli.
Diagram 2.1 shows the structural formula of the monomer of natural rubber.



Rajah 2.1 / Diagram 2.1

- (i) Berdasarkan Rajah 2.1, namakan struktur formula getah asli tersebut mengikut sistem penamaan IUPAC.
Based on the Diagram 2.1, name the structural formula of natural rubber based on the IUPAC nomenclature.

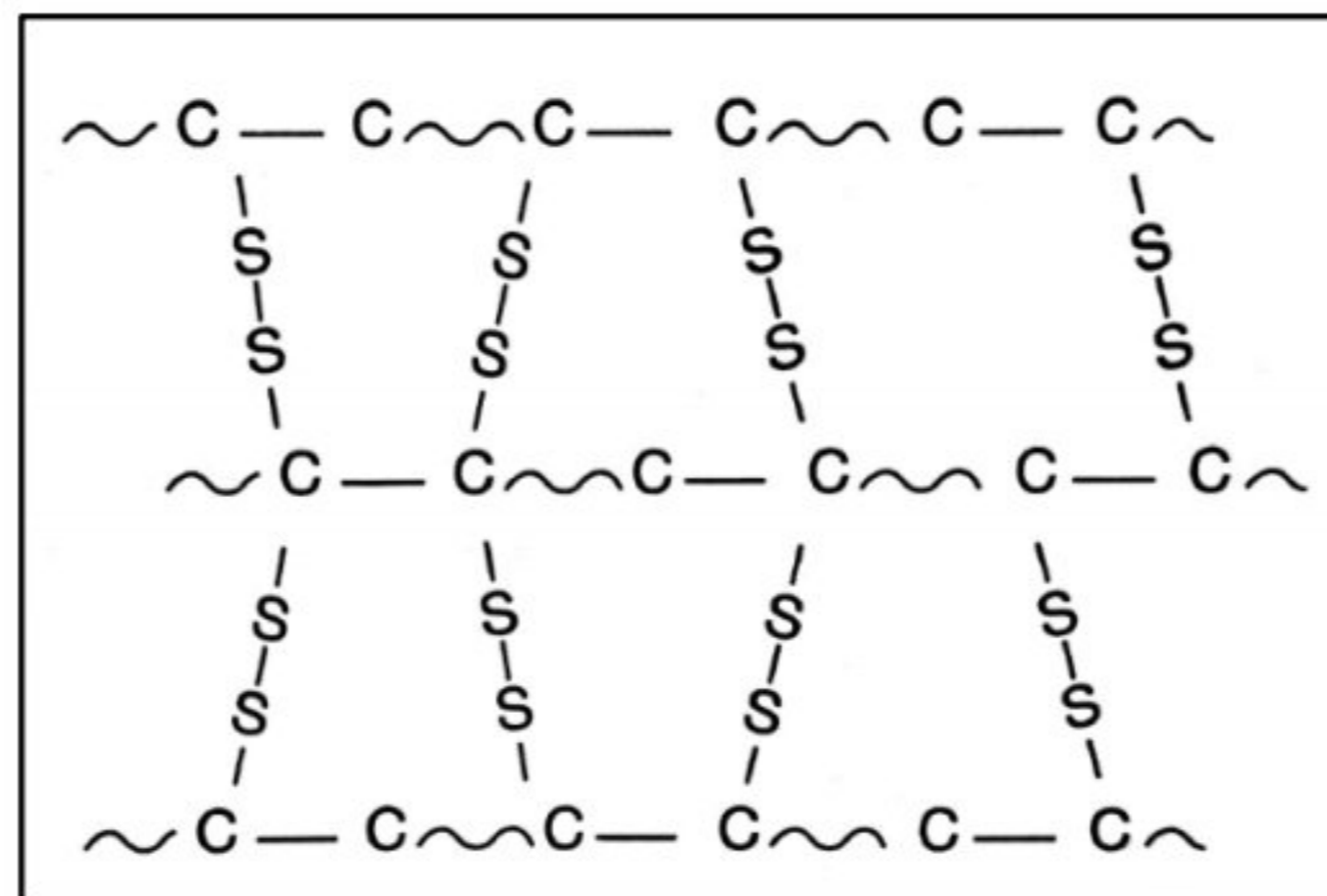
.....
[1 markah / mark]

- (ii) Lukiskan struktur molekul bagi getah asli.
Draw the molecular structure of natural rubber.

[1 markah / mark]

- (b) Rajah 2.2 menunjukkan struktur molekul getah asli selepas mengalami suatu proses untuk menambahbaik sifat-sifatnya.

Diagram 2.2 shows the molecular structure of natural rubber after undergoing a process to enhance its properties.



Rajah 2.2 / Diagram 2.2

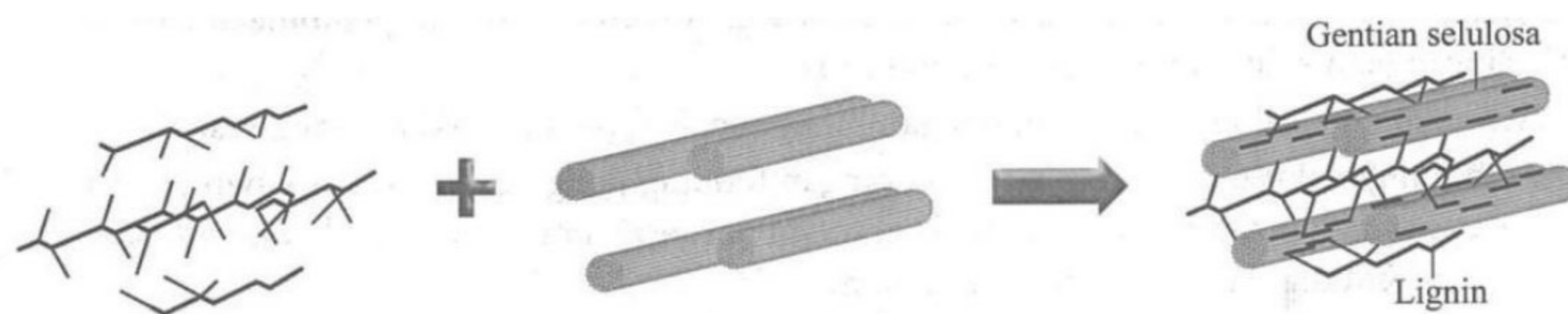
- (i) Namakan proses yang berlaku.
Name the process that occurred.

.....
[1 markah / mark]

- (ii) Terangkan bagaimana proses yang terlibat di (b)(i) meningkatkan sifat kekenyalan getah asli.
Explain how the process involved in (b)(i) improved the elasticity properties of natural rubber.

.....
.....
[2 markah / marks]

3. (a) Rajah 3.1 menunjukkan gabungan gentian selulosa dan lignin akan menghasilkan komposit.
Diagram 3.1 shows combination of cellulose and lignin will produce composite.



Rajah 3.1 / Diagram 3.1

- (i) Nyatakan fungsi lignin.
State the function of lignin.

.....
[1 markah / mark]

- (ii) Gentian optik merupakan bahan komposit.
Apakah bahan di dalam gentian optik dan nyatakan kelebihanannya.
Fibre optic is a composite material.
State the substances in fibre optic and its advantage.

.....

.....

.....

[2 markah / marks]

- (b) Piramid Giza yang terletak di Mesir dipercayai dibina daripada seramik. Seramik merupakan pepejal yang terdiri daripada bahan bukan organik dan bahan bukan logam. Ianya terhasil melalui proses pembentukan dan pengerasan menggunakan kaedah pemanasan pada suhu yang tinggi.
The Pyramids of Giza is in Egypt are believed to have been built out of ceramics. Ceramics are solids consisting of non-organic materials and non-metallic materials. It is produced through the process of formation and hardening using the heating method at high temperatures.



Rajah 3.2 / Diagram 3.2

- (i) Nyatakan dua jenis seramik.
State two types of ceramic.

.....

.....

[2 markah / marks]

- (ii)
- | |
|----------------------------|
| Tembikar <i>Pottery</i> |
|----------------------------|
- | |
|---------------------------|
| Batu-bata <i>Brick</i> |
|---------------------------|
- | |
|------------------------|
| Mangkuk <i>Bowl</i> |
|------------------------|

Berdasarkan jawapan anda di (3)(b)(i), jenis seramik yang manakah sesuai digunakan untuk membuat barangan di atas?

Based on your answer at (3)(b)(i), which type of ceramic is suitable to manufacture the above items?

.....
[1 markah / mark]

4. Jadual 4 menunjukkan formula empirik dan formula molekul bagi dua sebatian.
Table 4 shows the empirical formulae and molecular formulae of two compounds.

| Sebatian <i>Compound</i> | Formula empirik <i>Empirical formula</i> | Formula molekul <i>Molecular formula</i> |
|-----------------------------|---|---|
| P | | C_5H_{10} |
| Q | $Zn(NO_3)_2$ | $Zn(NO_3)_2$ |

Jadual 4 / *Table 4*

- (a) Nyatakan maksud formula empirik.
State the meaning of empirical formula.

.....
[1 markah / mark]

- (b) Tulis formula empirik bagi sebatian P.
Write empirical formula of compound P.

.....
[1 markah / mark]

- (c) Apabila sebatian Q dipanaskan dengan kuat, ia akan terurai membentuk zink oksida, gas oksigen dan gas nitrogen dioksida.

When compound Q is heated strongly, it will decompose to form zinc oxide, oxygen gas and nitrogen dioxide gas.

- (i) Tuliskan persamaan kimia yang seimbang bagi penguraian sebatian Q.
Write a balance chemical equation for the decomposition of compound Q.

.....
[2 markah/marks]

- (ii) Jika 0.5 mol sebatian Q dipanaskan, hitungkan isi padu gas nitrogen dioksida yang terhasil pada keadaan bilik.
 [Isi padu molar gas pada keadaan bilik ialah $24 \text{ dm}^3 \text{ mol}^{-1}$]
If 0.5 mole of compound Q is heated, calculate the volume of nitrogen dioxide gas produced at room condition.
[Molar volume of gas at room condition is $24 \text{ dm}^3 \text{ mol}^{-1}$]

[3 markah/marks]

5. Jadual 5 menunjukkan kekonduksian elektrik dan takat lebur bagi bahan R, S dan T.
Table 5 shows the electrical conductivity and melting point of substance R, S and T.

| Bahan <i>Substance</i> | Kekonduksian elektrik dalam keadaan <i>Electrical conductivity in the states of</i> | | Takat lebur °C <i>Melting point °C</i> |
|---------------------------|--|--------------------------|---|
| | Pepejal <i>Solid</i> | Leburan <i>Molten</i> | |
| R | Ya Yes | Ya Yes | 660 °C |
| S | Tidak No | Ya Yes | 192 °C |
| T | Tidak No | Tidak No | 80 °C |

Jadual 5 / Table 5

- (a) (i) Nyatakan jenis ikatan bagi bahan R, S dan T.
State the types of bonds for substance R, S and T

R: S: T:

[3 markah/marks]

- (ii) Nyatakan bagaimana ikatan terbentuk dalam bahan S.
State how the bonds is formed in substance S

.....
[1 markah/ mark]

- (iii) Adakah bahan T larut dalam air? Terangkan jawapan anda.
Does substance T soluble in water? Explain your answer.

.....
.....
.....
[2 markah/marks]

- (b) Mengapakah jari yang basah dapat membantu menyelak helaian kertas yang terdapat dalam buku? Terangkan jawapan anda.
Why does a wet finger help to turn the pages of a book? Explain your answer.

.....
.....
.....
[2 markah/marks]

6. Rajah 6 menunjukkan satu eksperimen yang dijalankan untuk menentukan haba penyesaran bagi tindak balas antara larutan kuprum (II) nitrat dan serbuk besi. 50 cm^3 larutan kuprum (II) nitrat 1.0 mol dm^{-3} dituang ke dalam cawan plastik dan suhu awal direkodkan. Serbuk besi yang berlebihan ditambah ke dalam cawan plastik yang sama. Campuran dikacau perlahan-lahan, dan suhu tertinggi direkodkan.

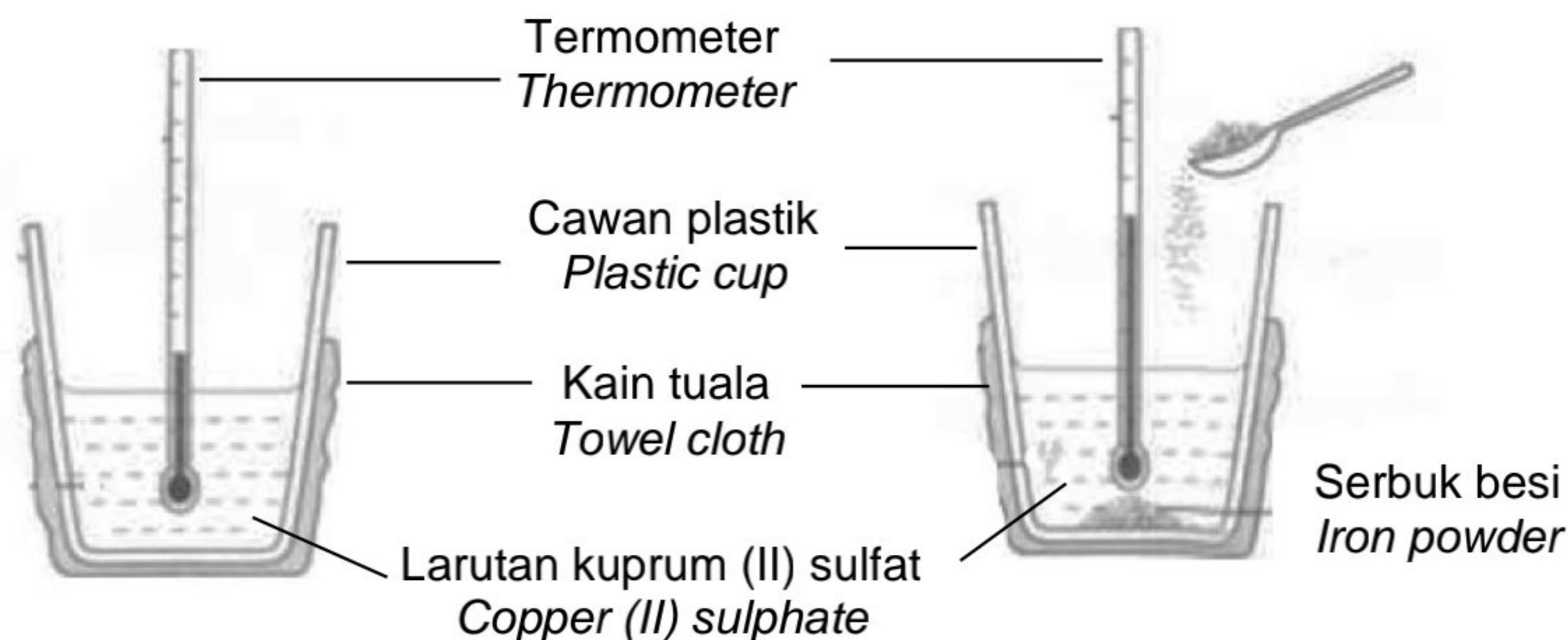
Suhu awal = 29.0°C

Suhu tertinggi campuran = 33.0°C

Diagram 6 shows an experiment conducted to determine the heat of displacement for reaction between copper (II) nitrate solution and iron powder. 50 cm^3 of 1.0 mol dm^{-3} copper (II) nitrate solution is poured into a plastic cup and the initial temperature is recorded. The excess iron powder is added to the same plastic cup. The mixture is stirred slowly, and the highest temperature is recorded.

Initial temperature = 29.0°C

Highest temperature of mixture = 33.0°C



Rajah 6 / Diagram 6

- (a) Apakah maksud haba penyesaran eksperimen itu?
What is the meaning of heat of displacement of the experiment?
.....
[1 markah/ mark]
- (b) Mengapakah besi dalam bentuk serbuk digunakan dalam eksperimen ini?
Why does iron in the form of powder is used in this experiment?
.....
[1 markah/ mark]
- (c) Mengapakah cawan plastik digunakan dalam eksperimen ini?
Why is plastic cup used in this experiment?
.....
[1 markah/ mark]
- (d) Nyatakan satu pemerhatian dalam eksperimen ini.
State one observation in this experiment.
.....
[1 markah/mark]
- (e) Lengkapkan persamaan ion berikut untuk tindak balas dalam eksperimen ini.
Complete the following ionic equation for the reaction in this experiment.



[1 markah/mark]

(f) Berdasarkan eksperimen, hitung
Based on the experiment, calculate

(i) jumlah haba yang dibebaskan.
the total heat released.

[Muatan haba tentu larutan: $4.2 \text{ J g}^{-1} \text{ }^\circ\text{C}^{-1}$, Ketumpatan air : 1 g cm^{-3}]
Specific heat capacity of solution: $4.2 \text{ J g}^{-1} \text{ }^\circ\text{C}^{-1}$

[2 markah/marks]

(ii) Bilangan mol kuprum(II) nitrat yang telah bertindak balas
The number of moles of copper (II) nitrate that has reacted.

[1 markah/mark]

(iii) haba penyesaran dalam tindak balas ini
the heat of displacement in this reaction.

[1 markah/mark]

7. (a) Jadual 7.1 menunjukkan maklumat mengenai tiga bahan tambah makanan yang berlainan P, Q dan R.

Table 7.1 shows information of three different food additives, P, Q and R.

| Bahan tambah makanan <i>Food additive</i> | Maklumat <i>Information</i> |
|--|--|
| P | Ditambah kepada minuman ringan berkalori rendah supaya ia menjadi manis dan untuk kegunaan pesakit diabetes. <i>Added to a low-calories soft drinks to sweeten it and for the consumption of diabetic patients.</i> |
| Q | Ditambah kepada daging segar supaya ia tahan lama dan kelihatan segar. <i>Added to fresh meat to preserve it and to make it looks fresh.</i> |
| R | Ditambah kepada cili jeruk atau jeruk mangga <i>Added to pickled chili or mango pickles</i> |

Jadual 7.1 / Table 7.1

- (i) Cadangkan nama bagi bahan tambah makanan P, Q dan R.
Suggest the name for food additives P, Q and R.

P:

Q:

R:

[3 markah/marks]

- (ii) Nyatakan kebaikan dan keburukan terhadap kegunaan bahan tambah makanan dalam kehidupan seharian.
State the advantage and disadvantage about the uses of food additives in daily life.

.....

.....

.....

[2 markah/marks]

- (iii) Mengapakah bahan R ditambah kepada cili jeruk atau jeruk mangga?
Why is substance R added to chilli pickles or mango pickles?

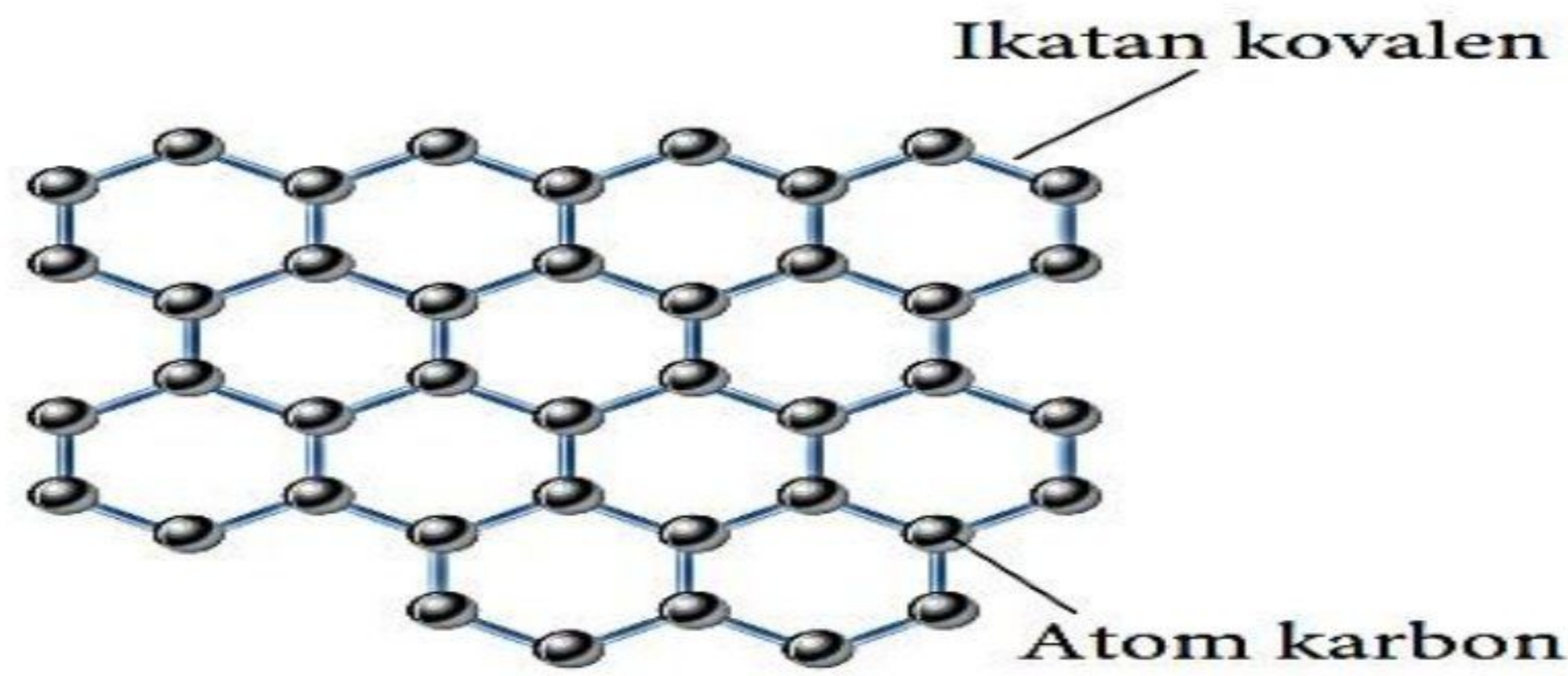
.....
 [1 markah/mark]

- (iv) Bahan tambah makanan R adalah sejenis asid lemah.
 Huraikan satu ujian kimia untuk mengesahkannya.
Food additives R is a weak acid. Describe the chemical test to confirm it.

.....

[2 markah/mark]

- (b) Rajah 7.2 menunjukkan struktur bagi helaian grafen
Figure 7.2 shows the structure of a graphene sheet.



Rajah 7.2 / Diagram 7.2

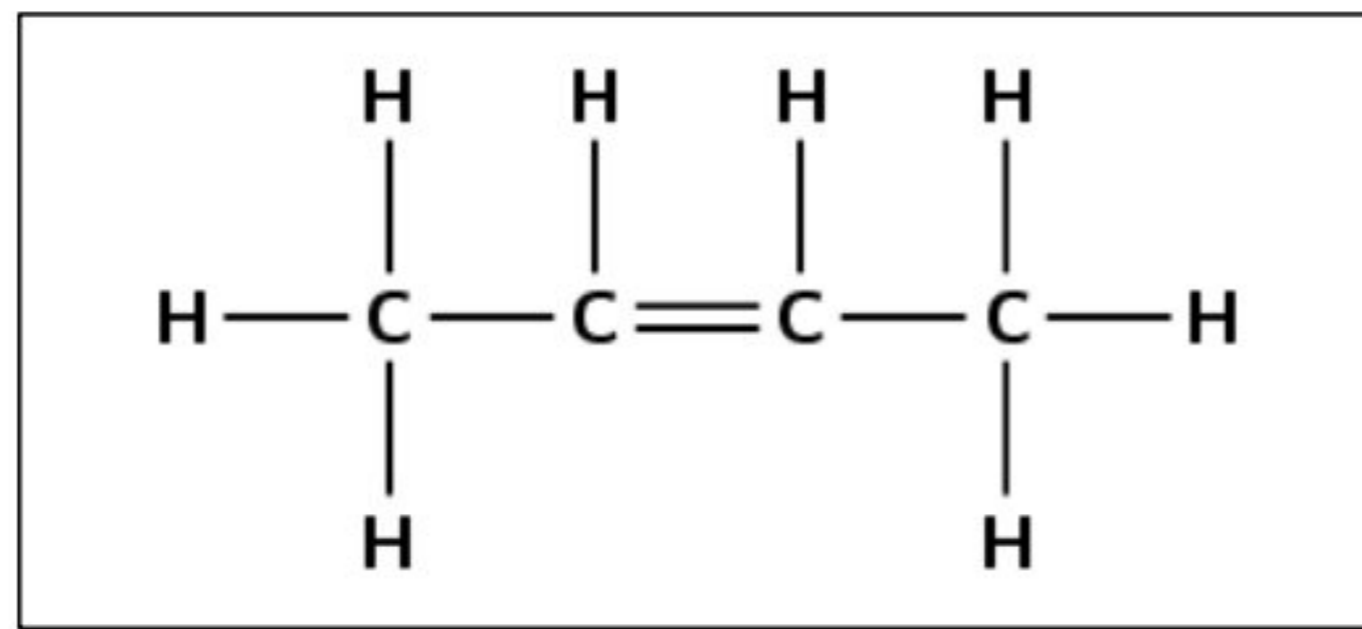
- (i) Grafen merupakan salah satu alotrop bagi karbon dan merupakan alotrop karbon yang paling reaktif. Namakan satu alotrop yang lain bagi karbon.
Graphene is one of the carbon allotropes and is the most reactive carbon allotrope. Name one other allotrope of carbon.

.....
 [1 markah/mark]

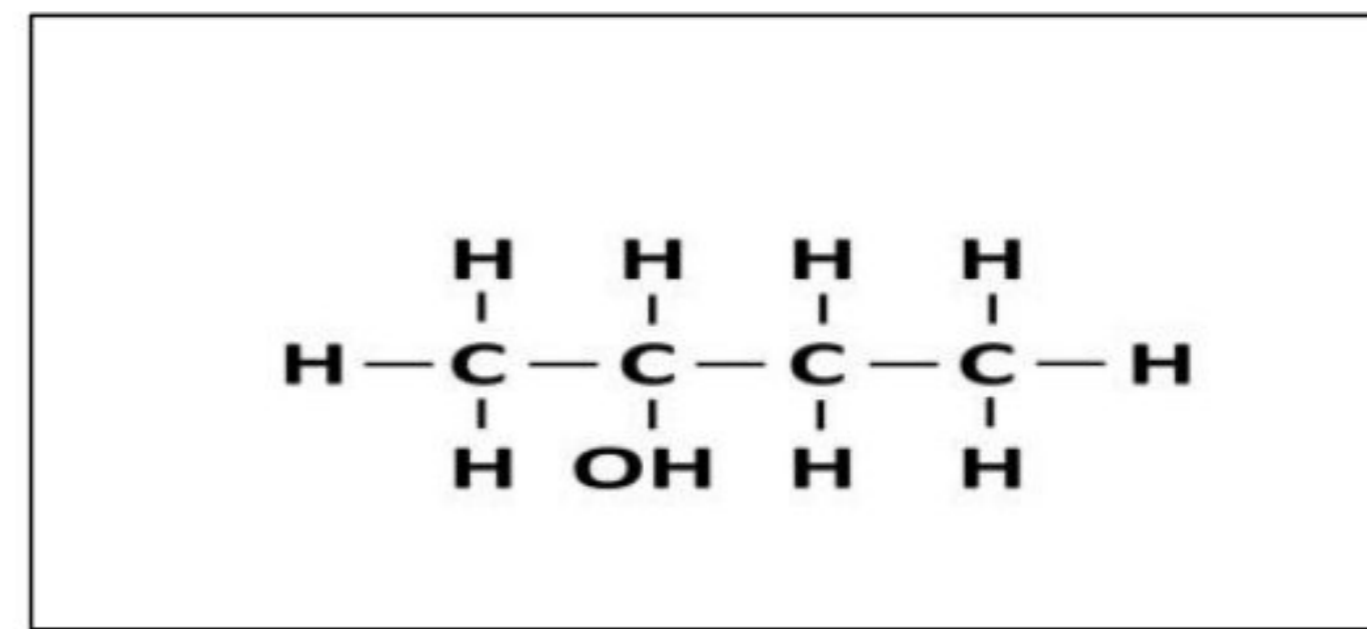
- (ii) Nyatakan one sifat fizik grafen.
State one physical properties of graphene.

.....
 [1 markah/mark]

8. Rajah 8 menunjukkan formula struktur sebatian J dan sebatian K.
 Diagram 8 shows the structural formulae of compounds J and K.



Sebatian / Compound J



Sebatian / Compound K

Rajah 8 / Diagram 8

- (a) Nyatakan siri homolog bagi sebatian J dan K.
 State the homologous series for compounds J and K

Sebatian /Compound J :

Sebatian/Compound K :

[2 markah/marks]

- (i) Namakan sebatian K.
 Name compound K

.....
 [1 markah/mark]

- (ii) Namakan tindak balas tersebut.
 Name the reaction.

.....
 [1 markah/mark]

- (ii) Lukiskan satu lagi isomer bagi sebatian K dan namakannya mengikut penamaan IUPAC.
 Draw another isomer of compound K and name it according to IUPAC nomenclature.

[2 markah/marks]

- (c) Sebatian L dihasilkan apabila larutan kalium dikromat berasid (VI) ditambah ke dalam tabung uji yang mengandungi sebatian K
Compound L is produced when an acidic potassium dichromate (VI) solution is added into a test tube containing compound K.

- (i) Nyatakan satu pemerhatian bagi tindak balas tersebut.

State one observation for this reaction.

.....

[1 markah/mark]

- (ii) Tuliskan formula molekul bagi sebatian L.

Write the molecular formula of compound L.

.....

[1 markah/mark]

- (d) Sebatian J terbakar dengan oksigen yang berlebihan.

Compound J burns completely in excess oxygen.

Tulis persamaan kimia bagi pembakaran lengkap J.

Write the chemical equation for the complete combustion of J.

.....

[2 markah/marks]

Bahagian B
Section B

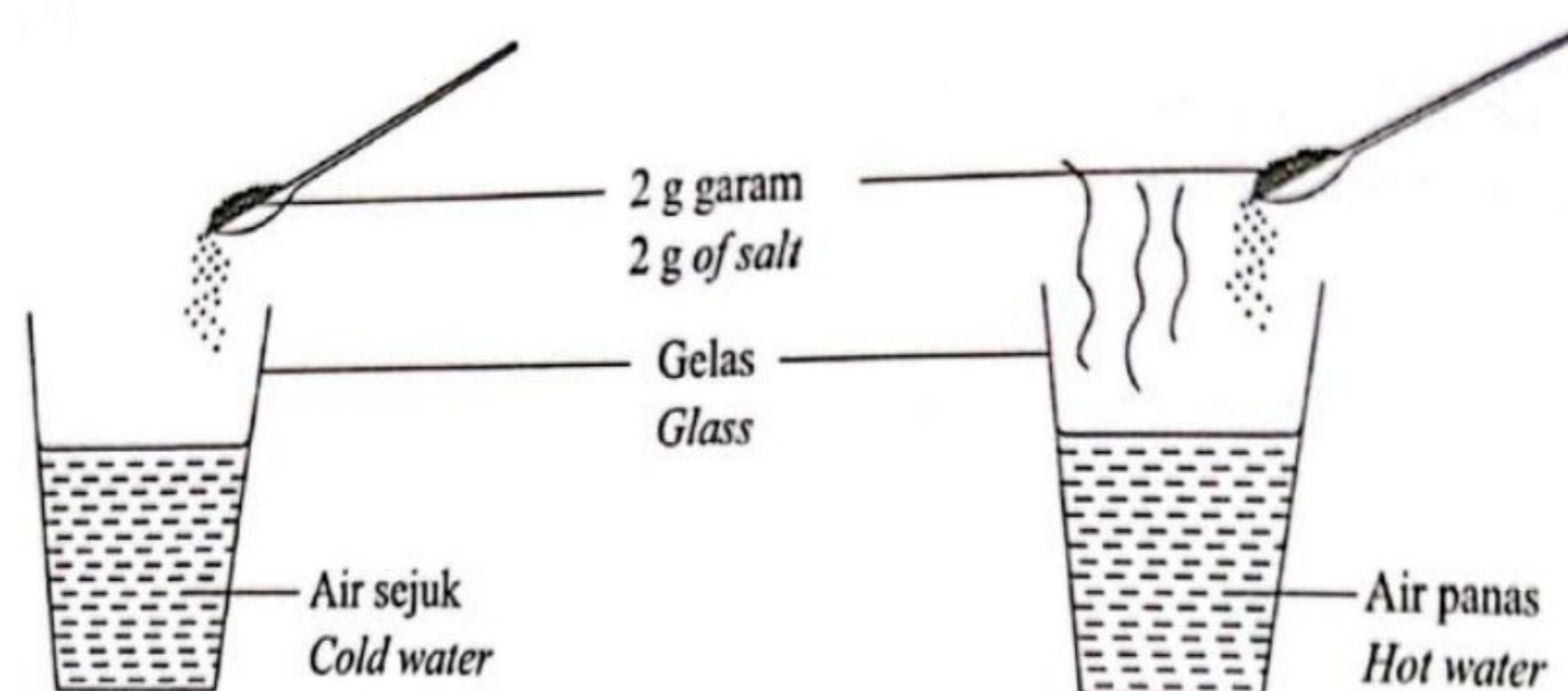
[20 markah]

[20 marks]

*Jawab mana-mana **satu** soalan*

*Answer any **one** question*

- 9 (a) Rajah 9 menunjukkan garam ditambahkan ke dalam dua gelas yang berbeza.
Diagram 9 shows salt added into two different glasses.



Rajah 9 / Diagram 9

Berdasarkan Rajah 9, garam di dalam gelas yang manakah akan melarut dengan lebih cepat? Terangkan jawapan anda.

Based on Diagram 9, salt in which glass will dissolve faster? Explain your answer.

[3 markah/marks]

- (b) Tiga eksperimen telah dijalankan untuk mengkaji faktor yang mempengaruhi kadar tindak balas. Jadual 9 menunjukkan bahan tindak balas dan suhu asid yang digunakan dalam eksperimen tersebut.

Three experiments have been carried out to study the factor that affect the rate of reaction. Table 9 shows the reactants and temperature of acid used in the experiment.

| Eksperimen Experiment | Bahan tindak balas Reactant | Suhu asid (°C) Temperature of acid (°C) |
|----------------------------------|--|--|
| I | Serbuk zink berlebihan +100 cm ³ asid sulfurik 0.5 mol dm ⁻³ <i>Excess zinc powder + 100 cm³ of 0.5 mol dm⁻³ sulphuric acid</i> | 20 |
| II | Serbuk zink berlebihan + 100 cm ³ asid sulfurik 1.0 mol dm ⁻³ <i>Excess zinc powder 100 cm of 10 mol dm⁻³ sulphuric acid</i> | 20 |
| III | Serbuk zink berlebihan+100 cm ³ asid sulfurik 0.5 mol dm ⁻³ <i>Excess zinc powder + 100 cm³ of 0.5 mol dm⁻³ sulphuric acid</i> | 40 |

Jadual 9 / Table 9

Berdasarkan Jadual 9,
Based on Table 9,

- (i) Nyatakan semua faktor yang mempengaruhi kadar tindak balas dalam Eksperimen I, II dan III.

State all factors that affecting the rate of reaction in Experiment T. II and III.

[2 markah /marks]

- (ii) Tulis persamaan kimia yang seimbang bagi tindak balas dalam Eksperimen 1.
Hitungkan isi padu gas yang dibebaskan.
[Isi padu molar gas pada keadaan bilik ialah $24.0 \text{ dm}^3 \text{ mol}^{-1}$]

*Write a balanced chemical equation for the reaction in Experiment I.
Calculate the volume of gas released.
[Molar volume of gas at room condition is $24.0 \text{ dm}^3 \text{ mol}^{-1}$]*

[5 markah /marks]

- (iii) Bandingkan kadar tindak balas antara:
Compare the reaction rate between:

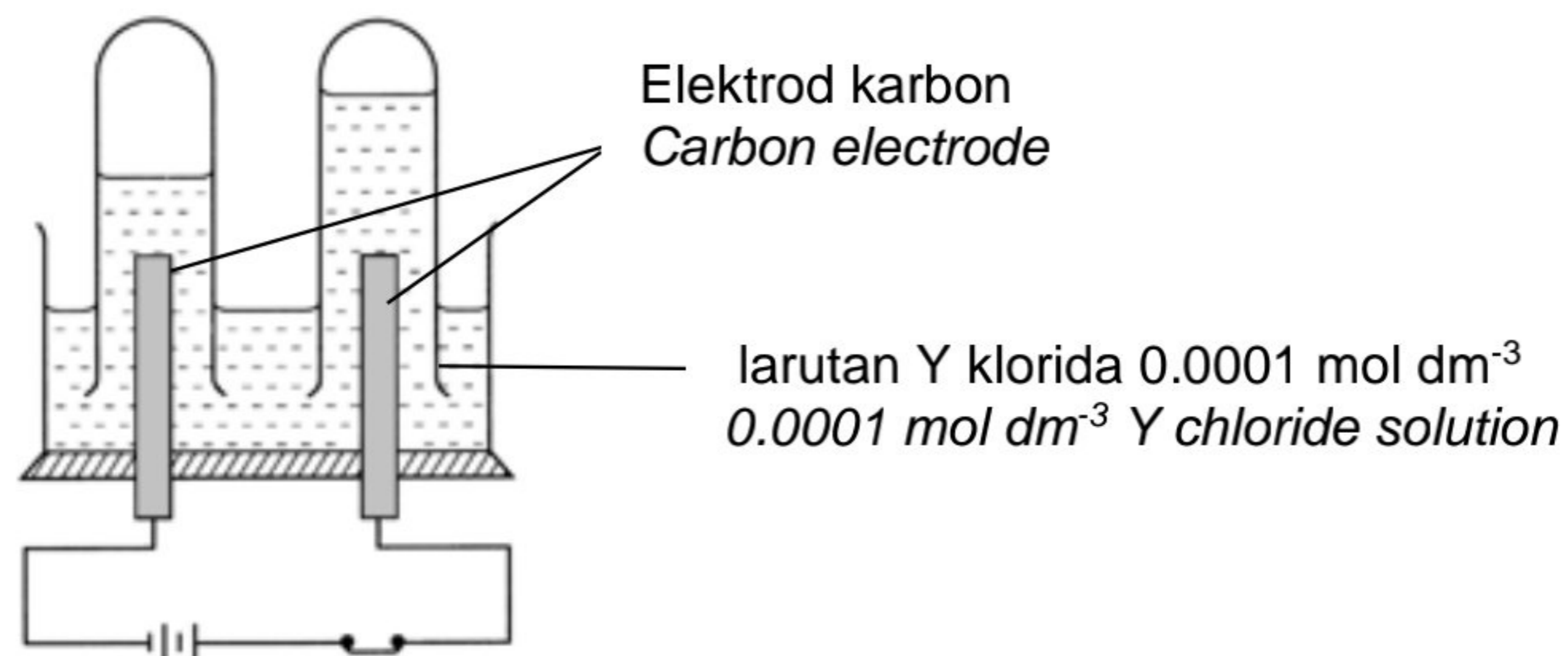
- Eksperimen I dan II
Experiment I and II
- Eksperimen I dan III
Experiment I and III

Terangkan jawapan anda dengan menggunakan Teori Perlanggaran.
Explain your answer by using Collision Theory.

[10 markah /marks]

- 10 (a) Rajah 10.1 menunjukkan susunan radas bagi elektrolisis larutan Y klorida $0.0001 \text{ mol dm}^{-3}$ menggunakan elektrod karbon. Hasil di anod dan katod ialah gas.

Diagram 10.1 shows the apparatus set-up for electrolysis of $0.0001 \text{ mol dm}^{-3}$ Y chloride solution using carbon electrode. The products at cathode and anode are gases.



Rajah 10.1 / Diagram 10.1

Cadangkan Y klorida. Tuliskan setengah persamaan bagi tindak balas yang berlaku di anod.

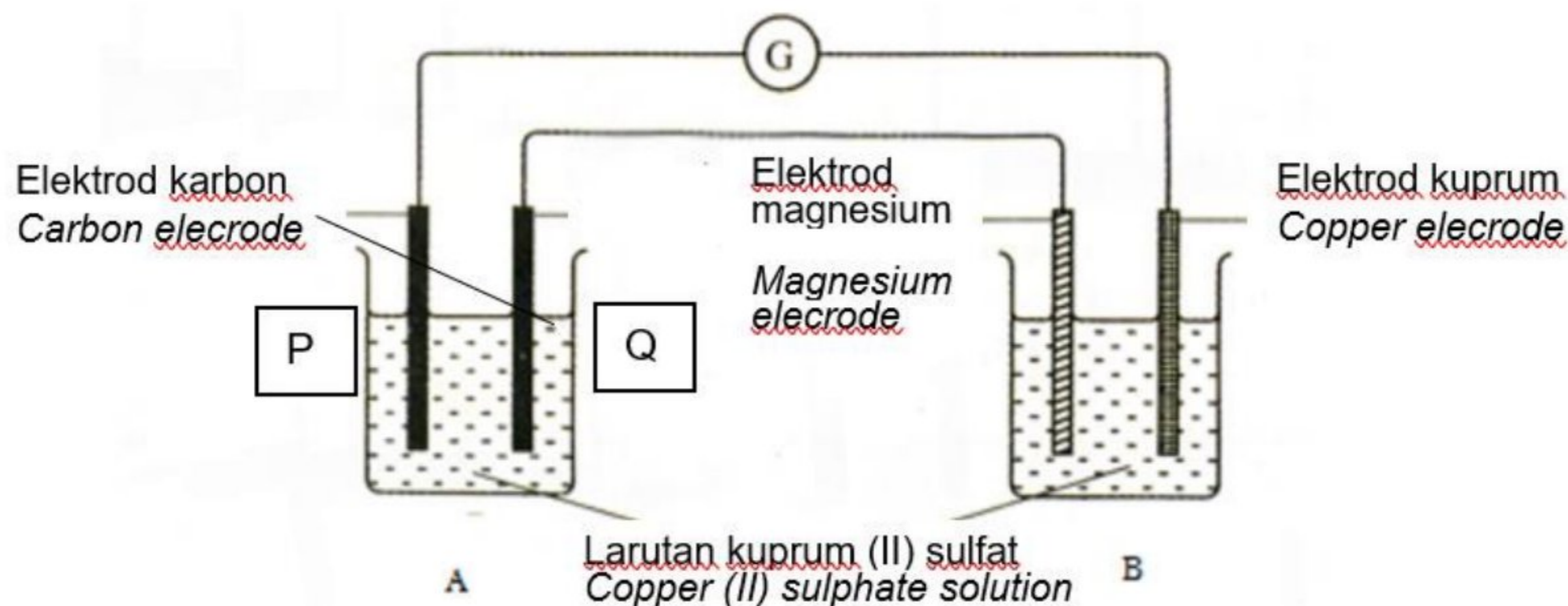
Jika larutan digantikan dengan larutan Y klorida 1.0 mol dm^{-3} nyatakan hasil di anod dan berikan satu sebab bagi jawapan anda.

*Suggest Y chloride. Write half equation for the reaction occurred at anode.
If the solution is replaced with 1.0 mol dm^{-3} of Y chloride solution, state the product at anode. Give reason for your answer.*

| Persamaan setengah sel <i>Half-cell equation</i> | E° / V |
|---|---------------|
| $Cl_2 + 2e \rightleftharpoons 2Cl^-$ | +1.36 |
| $O_2 + 2H_2O + 4e \rightleftharpoons 4OH^-$ | +0.40 |
| $2H^+ + 2e \rightleftharpoons H_2$ | 0.00 |

[4 markah/marks]

(b)



Rajah 10.2 / Diagram 10.2

| Persamaan setengah sel <i>Half-cell equation</i> | E° / V |
|---|---------------|
| $Mg^{2+} + 2e^- \rightleftharpoons Mg$ | -2.38 |
| $Cu^{2+} + 2e^- \rightleftharpoons Cu$ | +0.34 |
| $S_2O_8^{2-} + 2e^- \rightleftharpoons 2SO_4^{2-}$ | +2.01 |
| $O_2 + 2H_2O + 4e^- \rightleftharpoons 4OH^-$ | +0.40 |
| $2H^+ + 2e^- \rightleftharpoons H_2$ | 0.00 |

- (i) Berdasarkan Rajah 10.2, nyatakan elektrod yang bertindak sebagai katod dalam sel A.

Based on Diagram 10.2, state the electrode that act as the cathode in cell A.

[1 markah /mark]

- (ii) Terangkan tindak balas pada katod. Jawapan anda perlulah mengandungi aspek-aspek berikut:
- Senarai ion-ion yang tertarik
 - Nama ion yang dipilih untuk dinyahcas
 - Sebab ion ini dipilih untuk dinyahcas
 - Jenis tindak balas yang berlaku
 - Pemerhatian

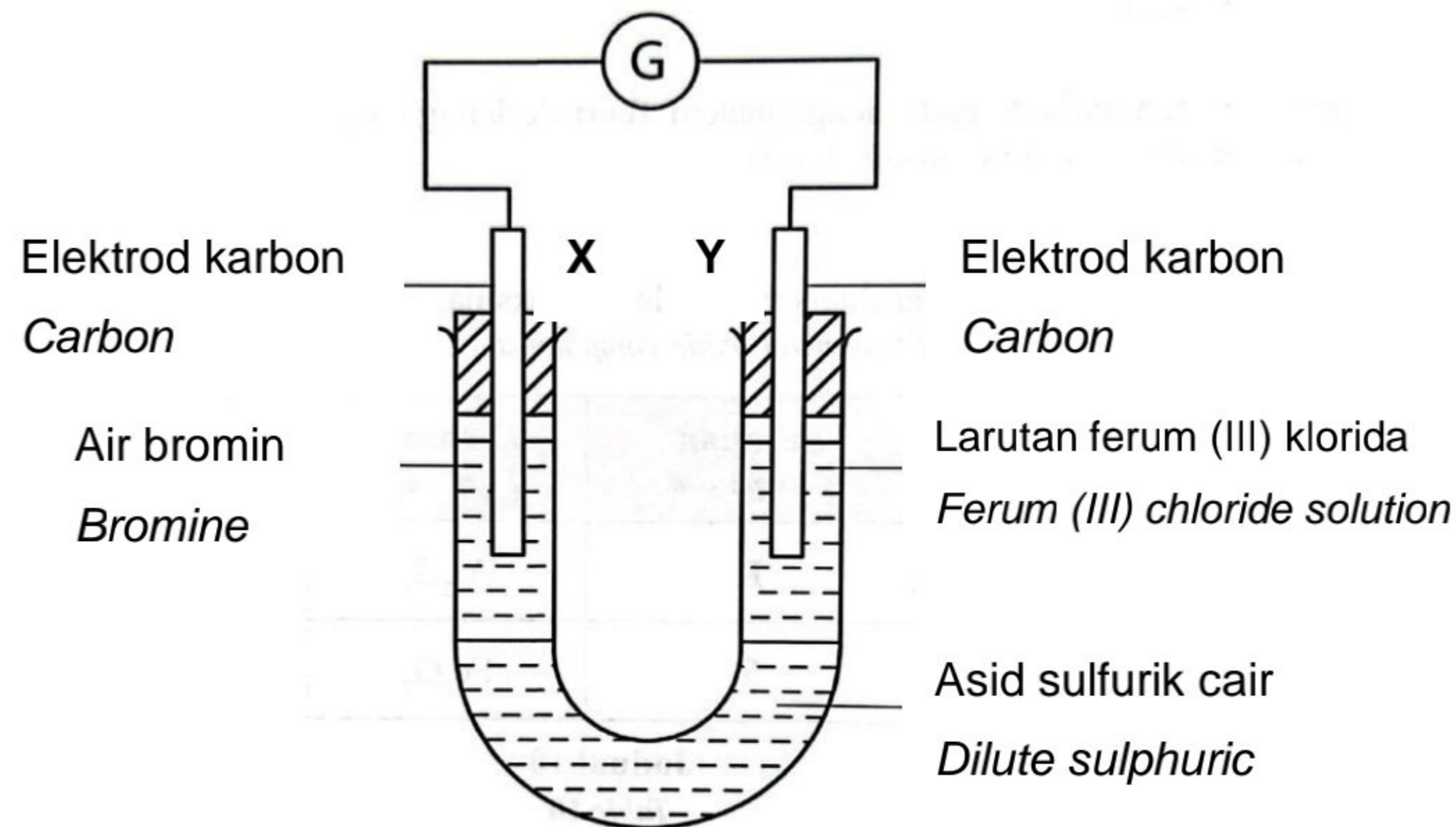
Explain the reactions at the cathode. Your answer should include the following

aspects:

- List of the ions that attracted
- Name the selectively discharged ions
- The reason why the ion is selectively discharged
- Type of the reaction occurred
- Observation

[6 markah /marks]

(c)



Rajah 10.3 / Diagram 10.3

Rajah 10.3 menunjukkan susunan radas yang dijalankan oleh Ally untuk mengkaji pemindahan elektron pada suatu jarak. Selepas beberapa ketika, Ally mendapati jarum galvanometer tidak terpesong dan tiada sebarang perubahan pada larutan yang digunakan.

Diagram 10.3 shows the arrangement of the apparatus set up carried out by Ally to study the transfer of electrons at a distance. After a while, Ally noticed that the galvanometer needle was not deflected and there was no change in the solution used.

- (i) Kaji Rajah 10.3 dan kenalpasti kesalahan yang dilakukan.

Study Diagram 10.3 and identify the mistake made.

[1 markah /mark]

- (ii) Dengan bantuan gambarajah berlabel, cadangkan pengubahsuaian yang perlu dilakukan oleh Ally dan tandakan arah pengaliran elektron.

With the help of a labelled diagram, suggest the modifications that Ally should make and mark the direction of electron flow.

[2 markah/marks]

- (iii) Selepas pengubahsuaian dijalankan, didapati jarum galvanometer terpesong.

Berdasarkan jawapan di (c) (ii)

- Kenalpasti agen pengoksidaan dan agen penurunan
- Nyatakan pemerhatian di X dan Y
- Tuliskan setengah persamaan yang berlaku di X dan Y
- Tuliskan persamaan ion yang terlibat

After the modification was carried out, it was found that the galvanometer needle was deflected.

Based on the answer in (c) (ii)

- *Identify oxidising agents and reducing agents*
- *State the observations at X and Y*
- *Write the half equation that occurs at X and Y*
- *Write the ionic equation involved*

[7 markah/marks]

Bahagian C Section C

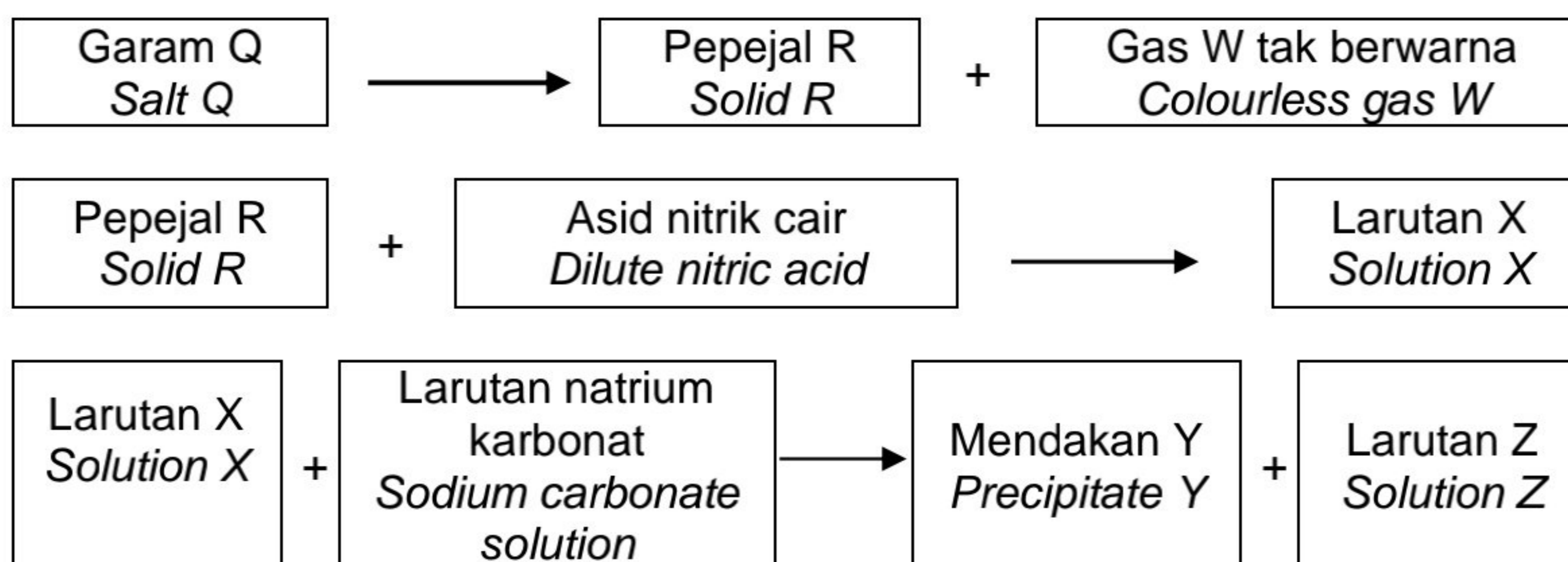
[20 markah]
[20 marks]

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

- 11 (a) Rajah 11.1 menunjukkan skema tindak balas garam Q. Apabila garam Q dipanaskan dengan kuat, pepejal R yang terbentuk adalah warna perang apabila panas dan bertukar kuning apabila sejuk. Tindak balas pepejal R dan asid nitrik cair menghasilkan larutan X.

Diagram 11.1 shows the reaction scheme of salt Q. When salt Q is heated strongly, solid R is formed, which is brown in colour when hot and turns yellow when cooled.

The reaction of solid R and dilute nitric acid produces a solution X.



Rajah 11 / Diagram 11

Berdasarkan Rajah 11.1 di atas,
Based on Diagram 11.1,

- (i) Nyatakan nama gas W yang mengeruhkan air kapur, Kenal pasti garam Q, pepejal R dan larutan X.

State the name of gas W that turns lime water cloudy. Identify salt Q, solid R, and solution X.

[4 markah /marks]

- (ii) Huraikan secara ringkas ujian kimia untuk mengesahkan anion dalam larutan Y.

Describe briefly a chemical test to verify the anion in solution Y.

[4 markah/marks]

- (b) (i) Cadangkan nama tindak balas yang berlaku antara larutan Y dan larutan natrium karbonat. Tuliskan persamaan kimia bagi tindak balas itu.

Suggest the name of reaction that occurred between solution Y and sodium carbonate solution. Write the chemical equation for the reaction.

[3 markah/marks]

- (ii)



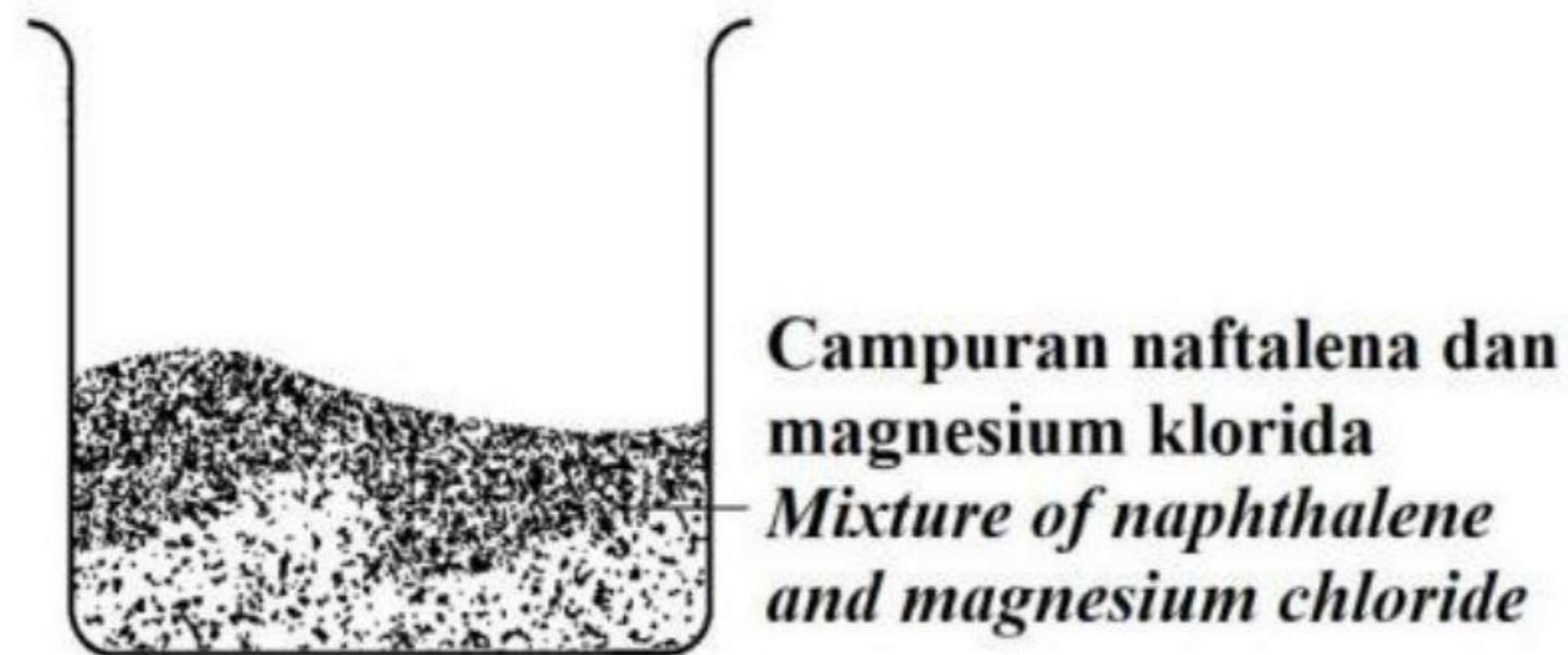
Salah satu garam yang terhasil daripada tindak balas dalam b(i) juga dijumpai dalam sandwich yang dimakan oleh Awang di sekolah. Sandwich mengandungi daging yang diproses seperti sosej dan salami. Garam ini ditambah ke dalam sosej dan salami sebagai agen pengawet yang menghalang pertumbuhan bakteria yang merosakkan daging dan mengekalkan warna merahnya. Namakan garam yang dijumpai dalam daging proses tersebut. Bolehkan garam itu dilarutkan dalam air?

One of the salts produces from the reaction in b(i) was also found in a sandwich that Awang ate at school. His sandwich contains processes meats such as sausages and salami. This salt is added the sausage and salami as a preservative agent that inhibits the growth of bacteria that spoil the meat and retain its read colour. Name the salt found in the process meat. Can the salt be dissolved in water?

[2 markah/marks]

- (c) Rajah 11.2 menunjukkan bikar yang mengandungi campuran dua pepejal putih.

Diagram 11.2 shows a beaker containing a mixture of two white solids.



Huraikan secara ringkas bagaimana naftalena boleh diasingkan daripada magnesium klorida. Terangkan perbezaan dalam pemerhatian selepas campuran diasingkan.

Describe briefly how to separate the naphthalene from the magnesium chloride. Explain the differences in the observations after the mixture is separated.

[7 markah / marks]

**KERTAS SOALAN TAMAT
END OF QUESTION PAPER**

JADUAL BERKALA UNSUR

| 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | | | | |
|--------------------------|--|---------------------------|--|------------------------------|--|---------------------------------|--|---------------------------------|--|----------------------------|--|----------------------------|--|--------------------------------|--|----------------------------|--|---------------------------|--|--------------------------------|--|----------------------------|--|
| H Hidrogen 1 | | He Helium 4 | | Li Litium 7 | | Be Berilium 9 | | B Boron 11 | | C Karbon 12 | | N Nitrogen 14 | | O Oksigen 16 | | F Fluorin 19 | | Ne Neon 20 | | | | | |
| 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | | |
| Li Litium 7 | | Be Berilium 9 | | B Boron 11 | | C Karbon 12 | | N Nitrogen 14 | | O Oksigen 16 | | F Fluorin 19 | | Ne Neon 20 | | Na Natrium 23 | | Mg Magnesium 24 | | Al Aluminium 27 | | | |
| 11 | | 12 | | 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | | 21 | | | |
| Na Natrium 23 | | Mg Magnesium 24 | | Al Aluminium 27 | | Si Silikon 28 | | P Fosforus 31 | | S Sulfur 32 | | Cl Klorin 35 | | Ar Argon 40 | | K Kalium 39 | | Ca Kalsium 40 | | Sc Skandium 45 | | | |
| 19 | | 20 | | 21 | | 22 | | 23 | | 24 | | 25 | | 26 | | 27 | | 28 | | 29 | | 30 | |
| K Kalium 39 | | Ca Kalsium 40 | | Sc Skandium 45 | | Ti Titanium 48 | | V Vanadium 51 | | Cr Kromium 52 | | Mn Mangan 55 | | Fe Feram 56 | | Co Kobalt 59 | | Ni Nikel 59 | | Cu Kuprum 64 | | Zn Zink 65 | |
| 37 | | 38 | | 39 | | 40 | | 41 | | 42 | | 43 | | 44 | | 45 | | 46 | | 47 | | 48 | |
| Rb Rubidium 86 | | Sr Strontium 88 | | Y Yttrium 89 | | Zr Zirkoniu m 91 | | Nb Niobium 93 | | Mo Molibdenu m 96 | | Tc Teknetium 98 | | Ru Rutheniu m 101 | | Rh Rodium 103 | | Pd Paladium 106 | | Ag Argentum 108 | | Cd Kadmium 112 | |
| 55 | | 56 | | 57 | | 72 | | 73 | | 74 | | 75 | | 76 | | 77 | | 78 | | 79 | | 80 | |
| Cs Sesium 133 | | Ba Barium 137 | | La Lanthanu m 139 | | Hf Hafnium 179 | | Ta Tantalum 181 | | W Tungsten 184 | | Re Renyum 186 | | Os Osmium 190 | | Ir Iridium 192 | | Pt Platinum 195 | | Au Aurum 197 | | Hg Merkurs 201 | |
| 87 | | 88 | | 89 | | 104 | | 105 | | 106 | | 107 | | 108 | | 109 | | 110 | | 111 | | 112 | |
| Fr Fransium 223 | | Ra Radium 226 | | Ac Actinium 227 | | Unq Unnil- kuadium 257 | | Unp Unnil- pentium 260 | | Unh Unnilhexium 263 | | Uns Unnilseptium 262 | | Uno Unnilokti- um 265 | | Une Unnilennium 266 | | 113 | | 114 | | 115 | |
| 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | | 13 | | 14 | | 15 | | 16 | |
| B Boron 11 | | C Karbon 12 | | N Nitrogen 14 | | O Oksigen 16 | | F Fluorin 19 | | Ne Neon 20 | | Na Natrium 23 | | Mg Magnesium 24 | | Al Aluminium 27 | | Si Silikon 28 | | P Fosforus 31 | | S Sulfur 32 | |
| 13 | | 14 | | 15 | | 16 | | 17 | | 18 | | 19 | | 20 | | 21 | | 22 | | 23 | | 24 | |
| Al Aluminium 27 | | Si Silikon 28 | | P Fosforus 31 | | S Sulfur 32 | | Cl Klorin 35 | | Ar Argon 40 | | K Kalium 39 | | Ca Kalsium 40 | | Sc Skandium 45 | | Ti Titanium 48 | | V Vanadium 51 | | Cr Kromium 52 | |
| 31 | | 32 | | 33 | | 34 | | 35 | | 36 | | 37 | | 38 | | 39 | | 40 | | 41 | | 42 | |
| Ga Galium 70 | | Ge Germaniu m 73 | | As Arsenik 75 | | Se Selenium 79 | | Br Bromin 80 | | Kr Krypton 84 | | Rb Rubidium 86 | | Sr Strontium 88 | | Y Yttrium 89 | | Zr Zirkoniu m 91 | | Nb Niobium 93 | | Mo Molibdenu m 96 | |
| 49 | | 50 | | 51 | | 52 | | 53 | | 54 | | 55 | | 56 | | 57 | | 58 | | 59 | | 60 | |
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| 67 | | 68 | | 69 | | 70 | | 71 | | 72 | | 73 | | 74 | | 75 | | 76 | | 77 | | 78 | |
| Ho Holmium 165 | | Er Erbium 167 | | Tm Tulium 169 | | Yb Iterbium 173 | | Lu Lutetium 175 | | Hf Hafnium 179 | | Ta Tantalum 181 | | W Tungsten 184 | | Re Renyum 186 | | Os Osmium 190 | | Ir Iridium 192 | | Pt Platinum 195 | |
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