

1 (a) Jadual 1 menunjukkan nama beberapa bahan kimia dengan formula kimia.

Table 1 shows the names of some chemical substance with its chemical formula.

Bahan kimia <i>Chemical substance</i>	Formula kimia <i>Chemical formula</i>
Iodin <i>Iodine</i>	I ₂
Kuprum(II) sulfat <i>Copper(II) sulphate</i>	CuSO ₄
Aluminium <i>Aluminium</i>	Al
Tetraklorometana <i>Tetrachloromethane</i>	CCl ₄

Jadual / Table 1

Berdasarkan Jadual 1,

Based on Table 1,

- (i) Nyatakan jenis zarah bagi tetraklorometana.
State the type of particles of tetrachloromethane.

.....

[1 markah / mark]

- (ii) Kelaskan bahan kimia dalam Jadual 1 kepada unsur dan sebatian.
Classify the substances in Table 1 into elements and compounds.

Unsur <i>Element</i>	Sebatian <i>Compound</i>

[2 markah / marks]

- (b) (i) Namakan tiga zarah subatom dalam suatu atom.
Name the three subatomic particles in an atom.

.....

[1 markah / mark]

- (ii) Atom natrium mempunyai 12 neutron dan 11 proton. Berapakah bilangan elektron dalam satu atom natrium?
Sodium atom has 12 neutrons and 11 protons. How many electrons are there in one sodium atom?

.....
[1 markah / mark]

- 2 (a) Terdapat empat jenis kaca yang digunakan dalam kehidupan seharian.

There are four types of glasses that are used in our daily life.

- (i) Namakan komponen utama kaca.

Name the major component of glass.

.....
[1 markah / mark]

- (ii) Jadual 2 menunjukkan tiga jenis kaca dan kegunaannya.

Table 2 shows three types of glasses and their uses.

Jenis kaca <i>Types of glass</i>	Kegunaan <i>Uses</i>
1. Kaca borosilikat <i>Borosilicate glass</i>	<ul style="list-style-type: none">• Alatan memasak <i>Cookware</i>• Radas kaca makmal <i>Laboratory glassware</i>
2.	<ul style="list-style-type: none">• Lampu hiasan <i>Decorative lamp</i>• Prisma <i>Prism</i>
3.	<ul style="list-style-type: none">• Botol <i>Bottle</i>• Cermin <i>Mirror</i>

Jadual / Table 2

Lengkapkan Jadual 2.

Complete Table 2.

[2 markah / marks]

- (b) Rajah 1 menunjukkan contoh kegunaan bahan komposit dalam struktur pembinaan jambatan.
Diagram 1 shows an example of use of composite material in bridge construction structures.



Rajah / Diagram 1

- (i) Apakah maksud bahan komposit?
What is the meaning of composite material?

.....
 [1 markah / mark]

- (ii) Namakan bahan komposit yang digunakan dalam Rajah 1.
Name the composite material used in Diagram 1.

.....
 [1 markah / mark]

- 3 (a) Jadual 3.1 menunjukkan tiga ion yang terbentuk daripada unsur peralihan.
Table 3.1 shows three ions formed from transition elements.

$\left[\begin{array}{c} \text{H}_3\text{N} \quad \text{NH}_3 \\ \diagdown \quad / \\ \text{Cu} \\ / \quad \diagdown \\ \text{H}_3\text{N} \quad \text{NH}_3 \end{array} \right]^{2+}$	$\left[\begin{array}{c} \text{OH}_2 \\ \\ \text{H}_2\text{O} \quad \text{OH}_2 \\ \diagdown \quad / \\ \text{Fe} \\ / \quad \diagdown \\ \text{H}_2\text{O} \quad \text{OH}_2 \\ \\ \text{OH}_2 \end{array} \right]^{2+}$	$\left[\begin{array}{c} \text{NH}_3 \quad \text{NH}_3 \\ \diagdown \quad / \\ \text{Pt} \\ / \quad \diagdown \\ \text{NH}_3 \quad \text{NH}_3 \end{array} \right]^{2+}$
Ion tetraaminakuprum(II) <i>Tetraamminecopper(II) ion</i>	Ion heksaakuaferat(II) <i>Hexaaquaferrate(II) ion</i>	Ion tetraaminaplatinum(II) <i>Tetraamineplatinum(II) ion</i>

Jadual / Table 3.1

Berdasarkan Jadual 3.1,
Based on Table 3.1,

- (i) Nyatakan ciri-ciri istimewa unsur peralihan yang ditunjukkan?
State the special characteristic of transition elements shown?

.....
 [1 markah / mark]

- (ii) Nyatakan satu unsur peralihan yang digunakan dalam proses penghidrogenan minyak sayuran untuk membuat marjerin.

State a transition element used in the hydrogenation process of vegetable oil to make margarine.

.....
[1 markah / mark]

- (iii) Dalam proses Haber, gas nitrogen bertindak balas dengan gas hidrogen untuk menghasilkan ammonia dalam kehadiran ferum sebagai mangkin.

In the Haber process, nitrogen gas reacts with hydrogen gas to produce ammonia in the presence of iron as a catalyst.

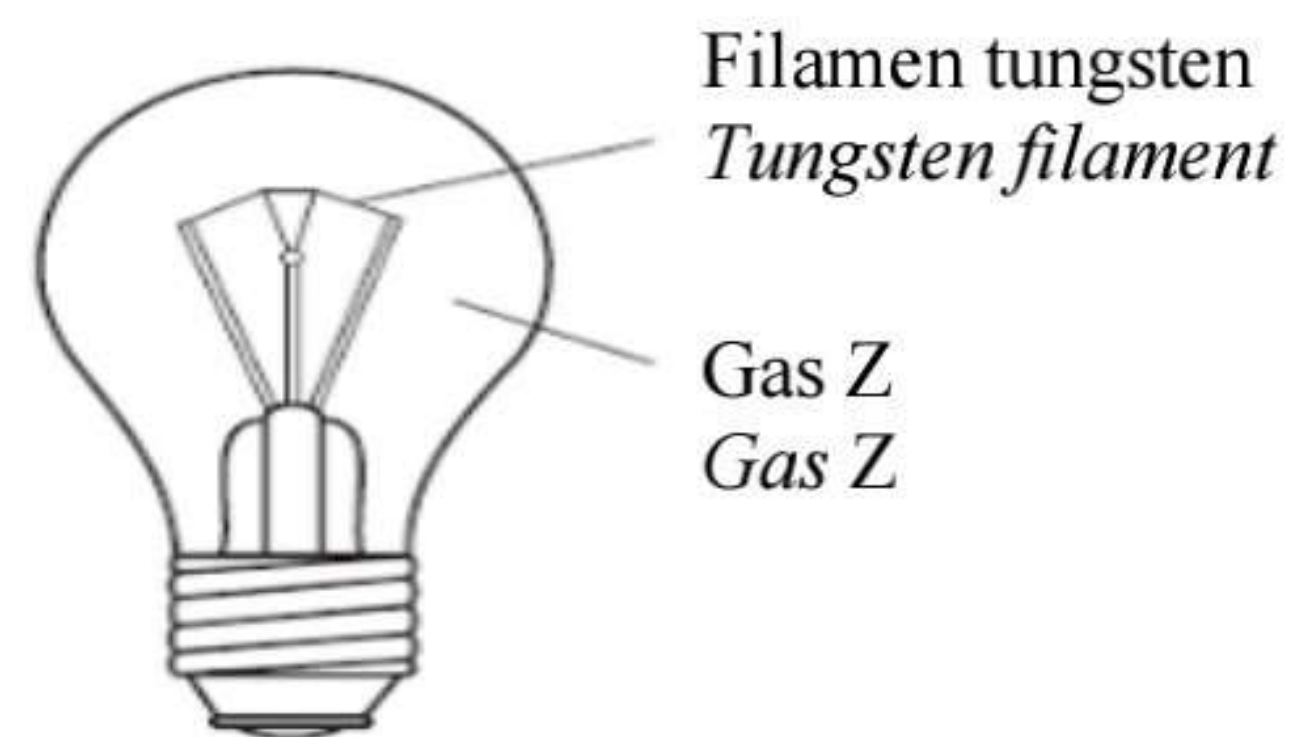
Tulis persamaan kimia bagi tindak balas itu.

Write the chemical equation for the reaction.

.....
[2 markah / marks]

- (b) Rajah 2 menunjukkan satu mentol yang diisi dengan gas Z.

Diagram 2 shows a bulb filled with gas Z.



Rajah / Diagram 2

- (i) Cadangkan nama gas Z.

Suggest the name of gas Z.

.....
[1 markah / mark]

- (ii) Mengapakah gas Z digunakan untuk mengisi mentol itu?

Why is gas Z used to fill the bulb?

.....
[1 markah / mark]

4 (a) Jadual 4 menunjukkan nama dan formula molekul beberapa sebatian.

Table 4 shows the name and molecular formula of some compounds.

Nama <i>Name</i>	Formula molekul <i>Molecular formula</i>
Natrium klorida <i>Sodium chloride</i>	NaCl
Ammonia <i>Ammonia</i>	NH ₃
Naftalena <i>Naphthalene</i>	C ₁₀ H ₈

Jadual / Table 4

Berdasarkan Jadual 4,

Based on Table 4,

- (i) nyatakan sebatian ion.
state the ionic compound.

.....

[1 markah / mark]

- (ii) terangkan keterlarutan ammonia dalam air
explain the solubility of ammonia in water.

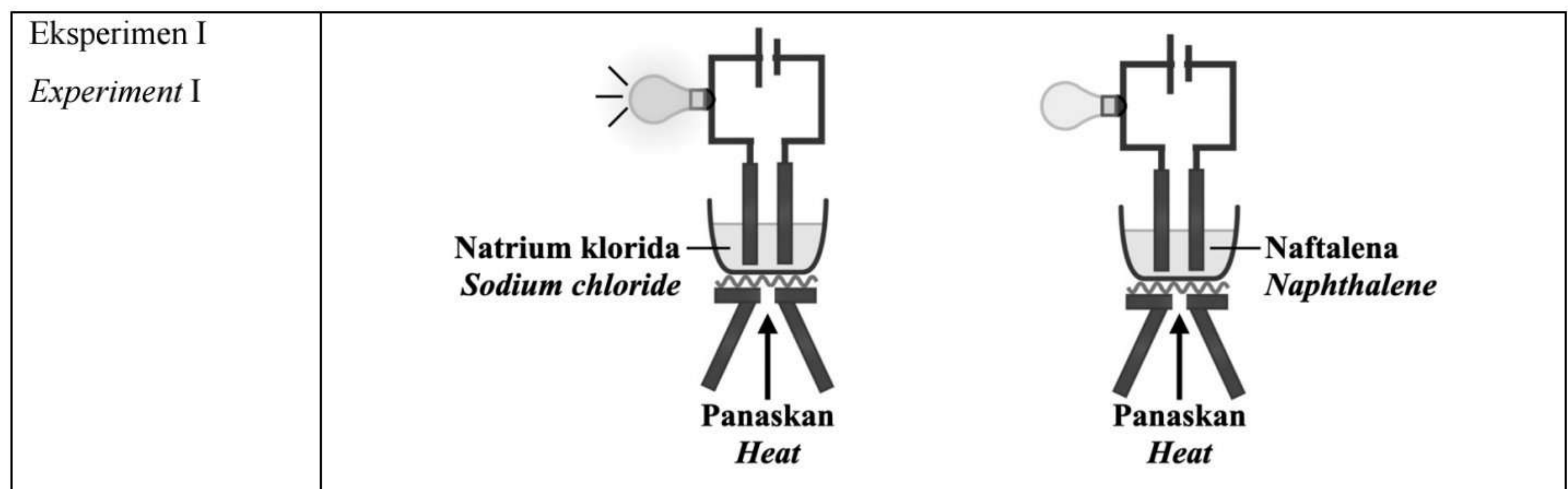
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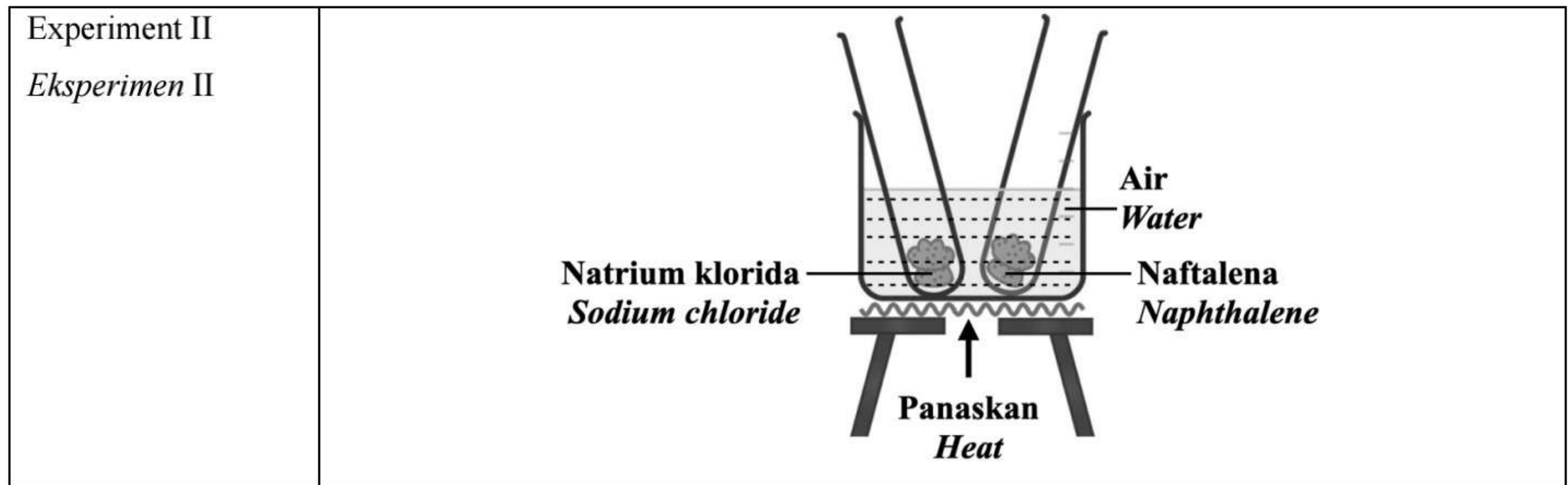
.....

[2 markah / marks]

- (b) Rajah 3 menunjukkan dua eksperimen yang dijalankan oleh seorang murid untuk membandingkan sifat sebatian ion dan sebatian kovalen.

Diagram 3 shows two experiments conducted by a student to compare the properties of ionic and covalent substances.





Rajah / Diagram 3

- (i) Berdasarkan Eksperimen I, bandingkan kekonduksian elektrik bagi kedua-dua sebatian. Terangkan jawapan anda.

Based on Experiment I, compare the electrical conductivity of both compounds. Explain your answer.

.....

.....

.....

[2 markah / marks]

- (ii) Dalam Eksperimen II, natrium klorida kekal dalam keadaan pepejal, manakala naftalena melebur selepas lima minit. Terangkan mengapa hal ini berlaku.

In Experiment II, sodium chloride remained in solid state, while naphthalene melts after five minutes. Explain why this happened.

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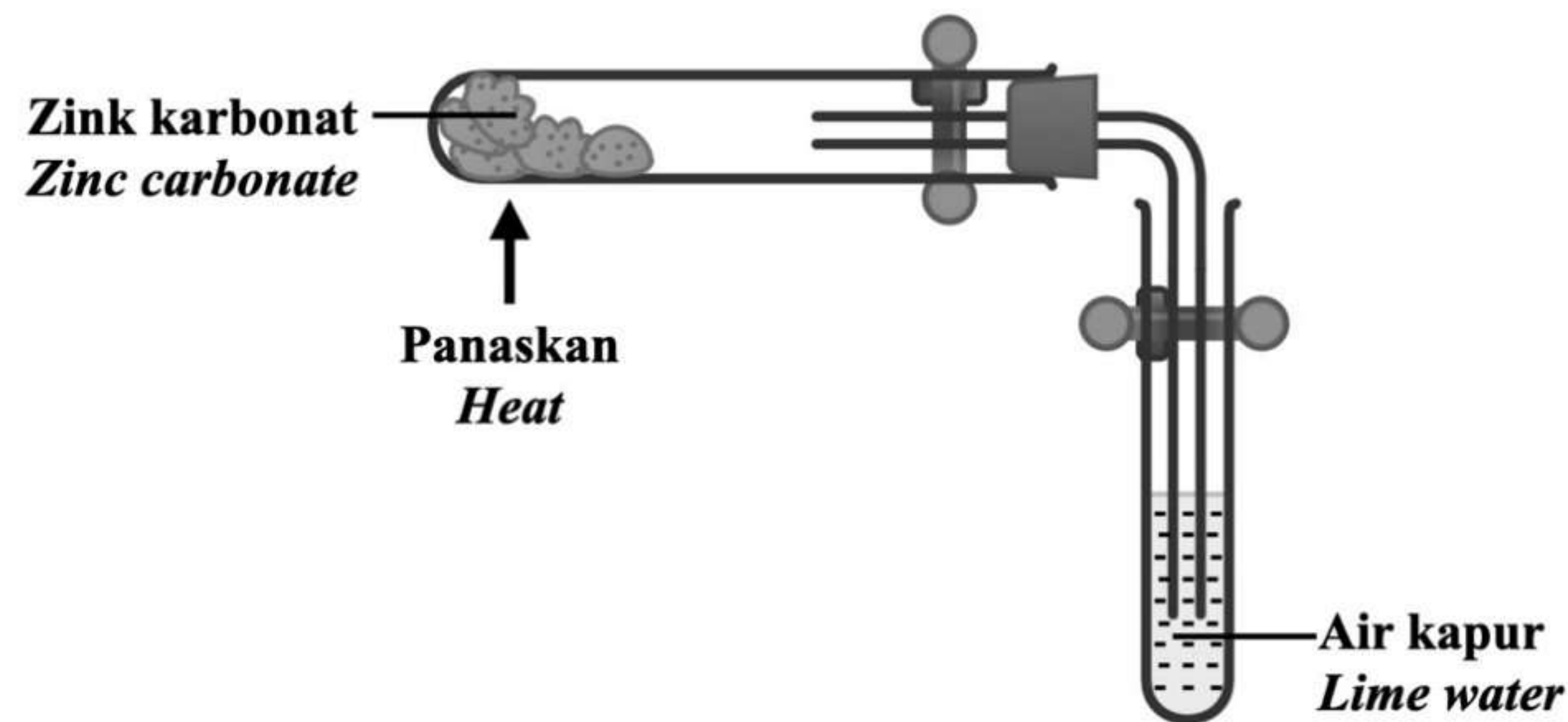
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[2 markah / marks]

- 5 (a) Rajah 4.1 menunjukkan susunan radas bagi pemanasan serbuk zink karbonat. Pemanasan zink karbonat membebaskan gas yang mengeruhkan air kapur.

Diagram 4.1 shows the apparatus set up for the heating of zinc carbonate powder. The heating of zinc carbonate releases a gas that turned lime water chalky.



Rajah / Diagram 4.1

- (i) Tulis formula kimia bagi zink karbonat.

Write the chemical formulae for zinc carbonate.

.....
[1 markah / mark]

- (ii) Namakan gas yang dibebaskan dalam eksperimen ini.

Name the gas released in this experiment.

.....
[1 markah / mark]

- (iii) Tuliskan persamaan kimia yang seimbang bagi tindak balas itu.

Write the balanced chemical equation for the reaction.

.....
[1 markah / mark]

- (iv) 25.0 g serbuk zink karbonat dipanaskan dalam eksperimen ini. Hitung isipadu gas yang dibebaskan pada keadaan bilik.

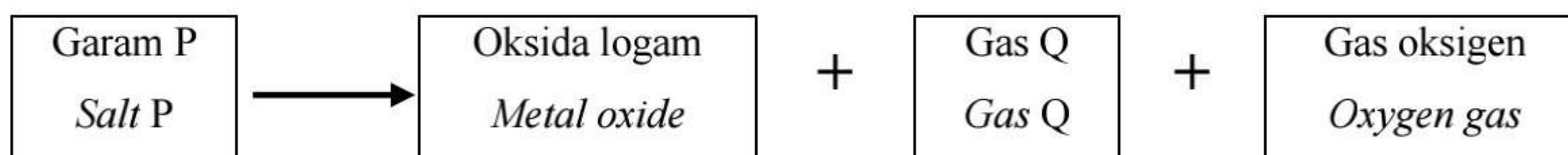
[Jisim atom relatif : Zn = 65 ; C = 12 ; O = 16 ; 1 mol gas menempati 24 dm³ pada keadaan bilik]

25.0 g zinc carbonate powder is heated in the experiment. Calculate the volume of gas released.

[Relative atomic mass : Zn = 65 ; C = 12 ; O = 16 ; 1 mol of gas occupies 24 dm³ at room condition]

[3 markah / marks]

- (b) Rajah 4.2 menunjukkan persamaan perkataan penguraian garam P. Gas Q yang terbebas adalah berwarna perang. *Diagram 4.2 shows the word equation for the decomposition of salt P. Gas Q released is brown in colour.*



Rajah / Diagram 4.2

- (i) Nyatakan pemerhatian apabila gas Q diuji dengan kertas litmus lembap. *State the observation when gas Q is tested with moist litmus paper.*

.....
[1 markah / mark]

- (ii) Garam P juga dilarutkan ke dalam air menjadi larutan akueus R. Nyatakan anion yang hadir dalam larutan akueus R.

Salt P is also dissolved in water to form aqueous solution R. State the anion present in solution R.

.....
[1 markah / mark]

- 6 (a) Jadual 5 menunjukkan pemerhatian apabila larutan A dan larutan B diuji dengan kertas litmus biru. *Table 5 shows the observation when solution A and B is tested with a blue litmus paper,*

Larutan <i>Solution</i>	Pemerhatian <i>Observation</i>
Asid etanoik dalam pelarut A <i>Ethanoic acid in solvent A</i>	Kertas litmus biru bertukar merah <i>Blue litmus paper turns red</i>
Asid etanoik dalam pelarut B <i>Ethanoic acid in solvent B</i>	Tiada perubahan <i>No change</i>

Jadual / Table 5

- (i) Berdasarkan Jadual 5, namakan pelarut A. *Based on Table 5, name of the solvent A.*

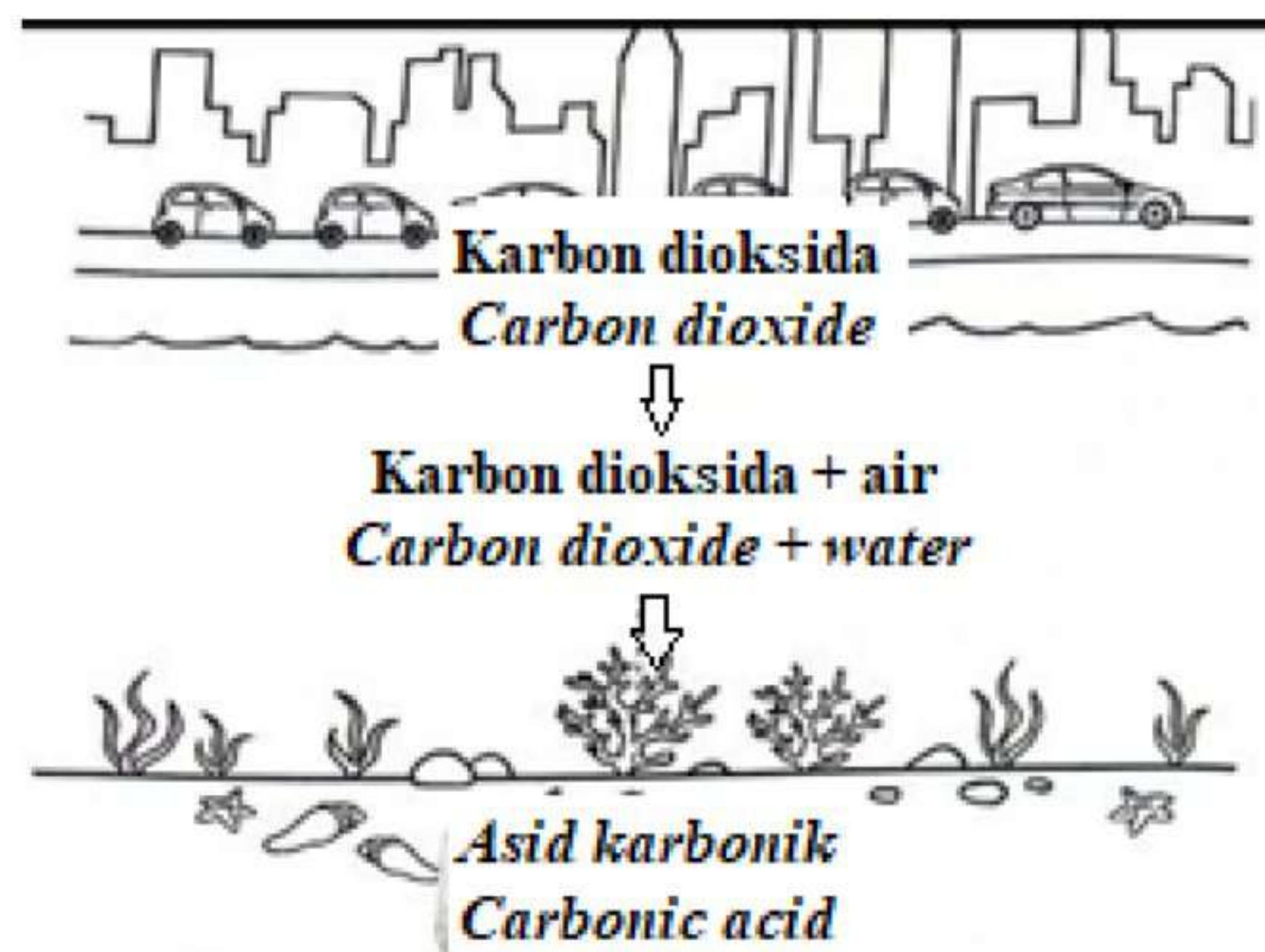
.....
[1 markah / mark]

- (ii) Jelaskan mengapa dalam larutan A terdapat perubahan kertas litmus. *Explain why in solution A there is a change in litmus paper.*

.....
[1 markah / mark]

(b) Rajah 5.1 menunjukkan bagaimana pengasidan laut berlaku.

Diagram 5.1 shows how the acidification of the ocean occurs.



Rajah / Diagram 5.1

(i) Jika air laut itu dipindahkan ke dalam akuarium, cadangkan satu kaedah yang sesuai untuk meningkatkan nilai pHnya.

If the sea water is transferred into an aquarium, suggest one suitable method to increase its pH value.

.....

[1 markah / mark]

(ii) Berikan satu sebab bagi jawapan anda di 6(b)(i).

Give one reason for the your answer in 6(b)(i).

.....

[1 markah / mark]

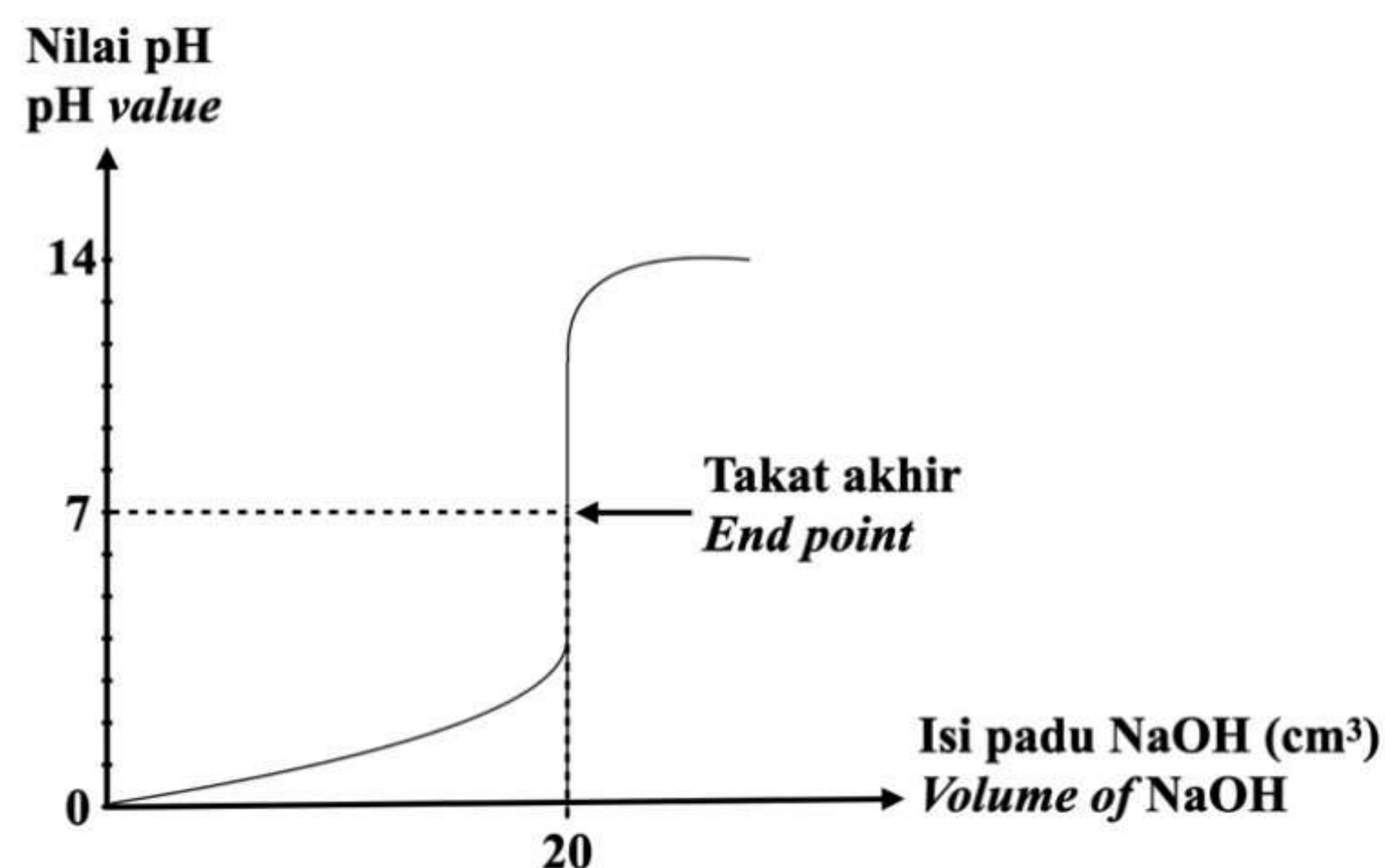
(iii) Apakah hubungan antara kepekatan ion hydrogen, H^+ dan nilai pH?

What is the relationship between the concentration of hydrogen ions, H^+ and the pH value?

.....

[1 markah / mark]

- (c) Suatu eksperimen telah dijalankan untuk mengkaji tindak balas antara larutan natrium hidroksida dan asid hidroklorik 2.0 mol dm^{-3} menggunakan fenoftalein sebagai penunjuk. Rajah 5.2 menunjukkan lengkung pentitratan tersebut. *An experiment was conducted to study reaction between sodium hydroxide solution and 2.0 mol dm^{-3} hydrochloric acid using phenolphthalein as indicator. Diagram 5.2 shows the titration curve.*



Rajah / Diagram 5.2

- (i) Hitung kepekatan larutan natrium hidroksida yang digunakan untuk meneutralkan 20 cm^3 asid hidroklorik itu. *Calculate the concentration of the sodium hydroxide solution used to neutralise 20 cm^3 of the hydrochloric acid.*

[2 markah / marks]



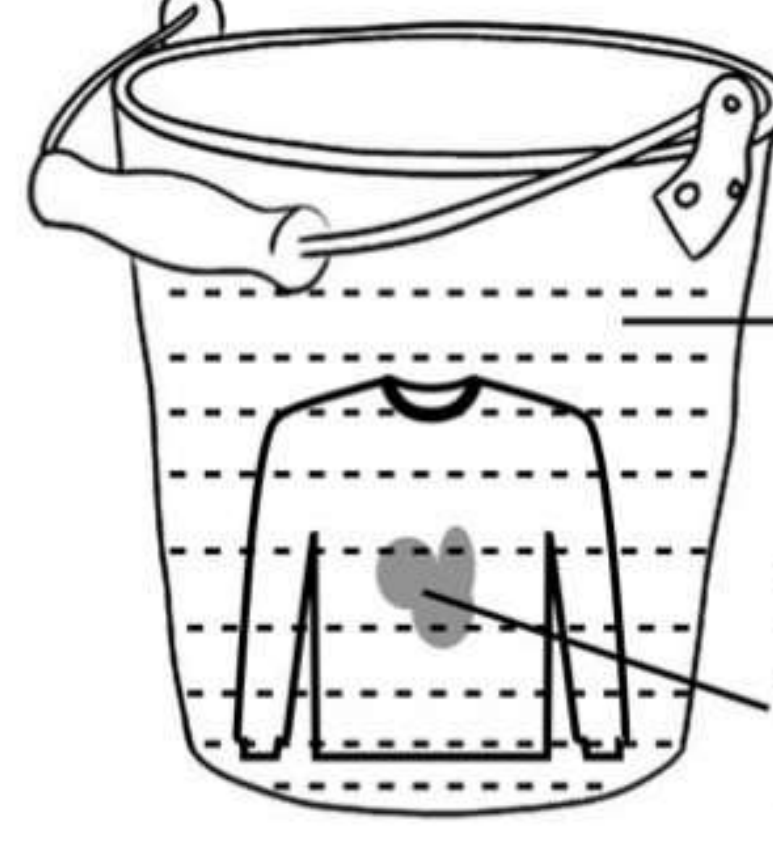

- (ii) Eksperimen itu diulangi dengan menggunakan asid sulfurik 2.0 mol dm^{-3} bagi menggantikan asid hidroklorik. Ramalkan isipadu larutan natrium hidroksida yang diperlukan. Terangkan jawapan anda. *The experiment is repeated by using 2.0 mol dm^{-3} sulphuric acid to replace the hydrochloric acid. Predict the volume of sodium hydroxide solution needed. Explain your answer.*

.....

[2 markah / marks]

- 7 (a) Rajah 6.1 menunjukkan kesan tindakan pencucian agen pencuci X dan agen pencuci Y ke atas pakaian yang kotor akibat tumpahan kuah kari.

Diagram 6.1 shows effects of cleansing action of cleaning agent X and the cleaning agent Y on dirty clothes due to the spill of curry gravy.

Situasi <i>Situation</i>	Susunan radas <i>Apparatus set-up</i>	Pemerhatian <i>Observation</i>
I	 <p>Air laut + agen pencuci X <i>Sea water + cleaning agent X</i></p> <p>Kotoran berminyak <i>Oily stain</i></p>	
II	 <p>Air laut + agen pencuci Y <i>Sea water + cleaning agent Y</i></p> <p>Kotoran berminyak <i>Oily stain</i></p>	

Rajah / Diagram 6.1

- (i) Berdasarkan Rajah 6.1, dalam situasi manakah tindakan agen pencuci yang kurang berkesan? Terangkan jawapan anda.

Based on Diagram 6.1, in which situation is the cleaning agent action less effective? Explain your answer.

.....

.....

.....

[3 markah / marks]

- (ii) Namakan agen pencucian bagi jawapan anda di 7(a)(i).

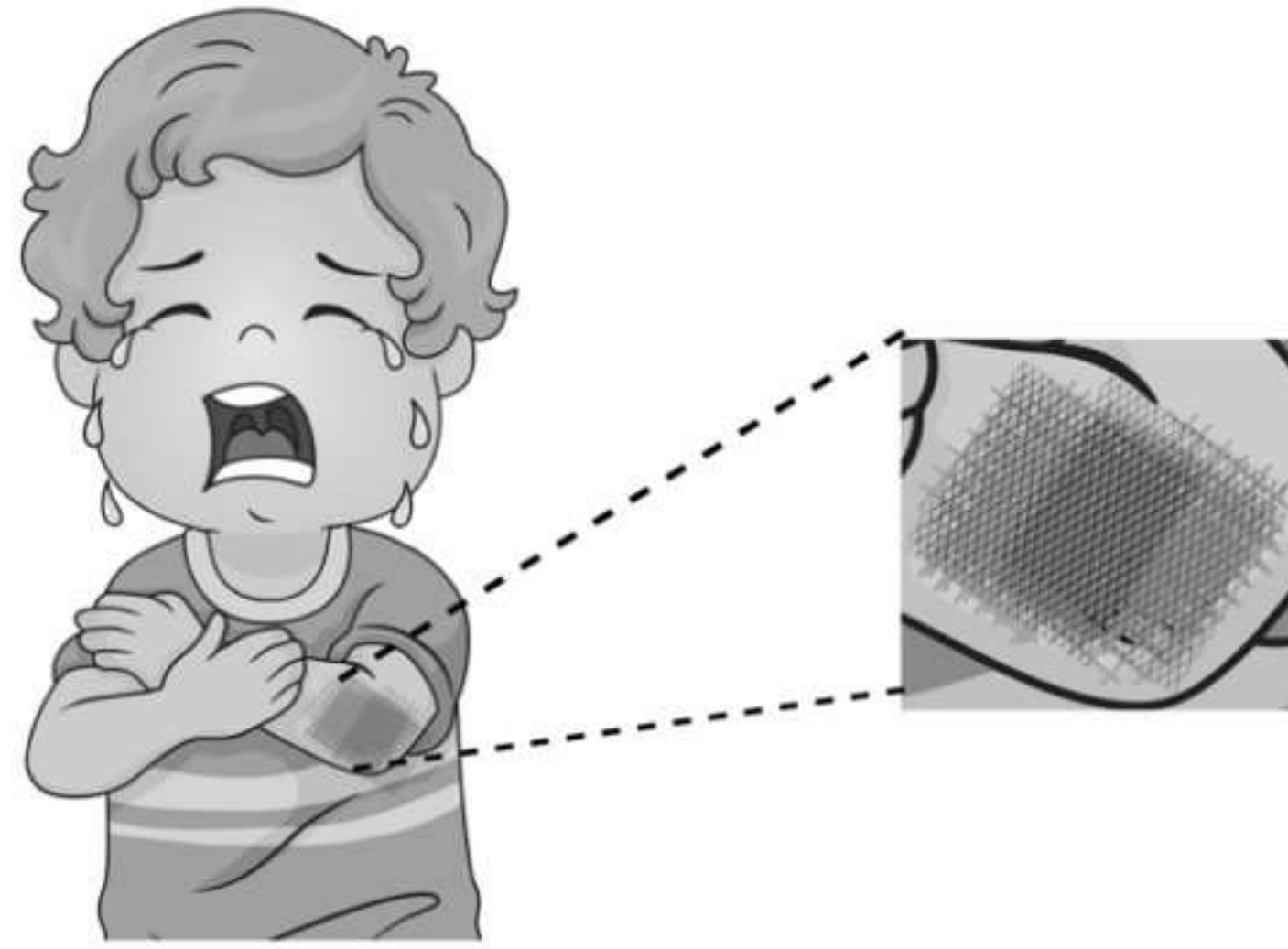
Name the cleaning agent based on your answer in 7(a)(i).

.....

[1 markah / mark]

(b) Rajah 6.2 menunjukkan tangan seorang murid yang luka.

Diagram 6.2 shows the injured hand of a pupil.



Rajah / Diagram 6.2

Murid tersebut menyapu luka itu dengan menggunakan iodine. Namakan sejenis ubat tradisional yang boleh digunakan sebagai alternatif kepada iodine. Berikan dua kelebihan penggunaan ubat tradisional tersebut.

The student wipes the wound with iodine. Name a type of traditional medicine that can be used as an alternative to iodine. Give two benefits of using the traditional medicine.

.....

.....

.....

[3 markah / marks]

(c) Rajah 6.3 menunjukkan bil elektrik yang tinggi akibat penggunaan penyaman udara di rumah Syahmi.

Diagram 6.3 shows a relatively expensive electricity bill due to the usage of air conditioners in Syahmi's house.



Rajah / Diagram 6.3

Berdasarkan pengetahuan anda tentang aplikasi teknologi hijau, terangkan bagaimanakah anda dapat mengurangkan penggunaan tenaga di rumah Syahmi?

Based on your knowledge of green technology applications, explain how you can reduce the energy usage in Syahmi's house?

.....

.....

.....

[3 markah / marks]

- 8 Tiga set eksperimen dijalankan untuk menyiasat faktor-faktor yang mempengaruhi kadar tindak balas. Jadual 6 menunjukkan bahan tindak balas dan keadaan tindak balas bagi Set I, II dan III.

Three sets of experiment are carried out to investigate the factors that affecting the rate of reactions. Table 6 shows the reactants and the conditions of reaction for Set I, II and III.

Set	Bahan tindak balas <i>Reactant</i>	Suhu <i>Temperature</i> (°C)	Masa yang diambil untuk mengumpul 50 cm ³ gas hidrogen (s) <i>Time taken to collect 50 cm³ of hydrogen gas (s)</i>
I	Serbuk zink berlebihan + 25 cm ³ asid hidroklorik 0.1 mol dm ⁻³ <i>Excess zinc powder + 25 cm³ hydrochloric acid 0.1 mol dm⁻³</i>	30.0	50
II	Serbuk zink berlebihan + 25 cm ³ asid hidroklorik 0.1 mol dm ⁻³ <i>Excess zinc powder + 25 cm³ hydrochloric acid 0.1 mol dm⁻³</i>	40.0	30
III	Ketulan zink berlebihan + 25 cm ³ asid hidroklorik 0.1 mol dm ⁻³ <i>Excess zinc granules + 25 cm³ hydrochloric acid 0.1 mol dm⁻³</i>	40.0	60

Jadual / Table 6

Berdasarkan Jadual 6,

Based on Table 6,

- (a) nyatakan dua faktor yang mempengaruhi kadar tindak balas.

state two factors that affect the rate of reaction.

.....

.....

[2 markah / marks]

- (b) nyatakan satu perubahan yang dapat diperhatikan dalam eksperimen ini yang boleh digunakan untuk menentukan kadar tindak balas.

state one observable change in this experiment that can be used to determine the rate of reaction.

.....

[1 markah / mark]

- (c) Tulis persamaan kimia bagi tindak balas antara zink dan asid hidroklorik.

Write the chemical equation for the reaction between zinc and hydrochloric acid.

.....

[1 markah / mark]

(d) Hitung kadar tindak balas purata dalam
Calculate the average rate of reaction in

Set I :

Set II :

[1 markah / mark]

(e) (i) Bandingkan kadar tindak balas antara Set I dan Set II.
Compare the rate of reaction between Set I and Set II.

.....

[1 markah / mark]

(ii) Terangkan jawapan anda di 8(e)(i) berdasarkan teori perlanggaran.
Explain your answer in 8(e)(i) based on collision theory.

.....

.....

[2 markah / marks]

(f) Seorang murid ingin meningkatkan kadar tindak balas bagi Set I dengan menggantikan asid hidroklorik dengan asid etanoik yang sama kepekatan. Pada pandangan anda, adakah murid itu membuat keputusan yang betul? Terangkan jawapan anda.

A student wishes to increase the rate of reaction for Set I by replacing the hydrochloric acid with ethanoic acid of the same concentration. In your opinion, do you think he made a correct decision? Explain your answer.

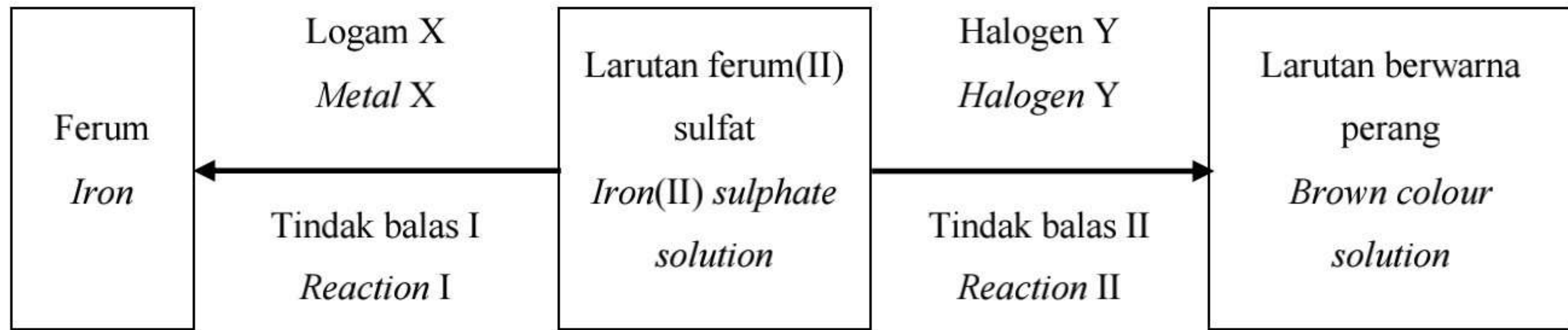
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[2 markah / marks]

- 9 (a) Rajah 8 menunjukkan carta alir pertukaran ferum(II) sulfat melalui tindak balas redoks.

Diagram 8 shows a flow chart for the conversion of iron(II) sulphate through redox reactions.



Rajah / Diagram 8

- (i) Nyatakan definisi bagi tindak balas redoks dan warna bagi ferum(II) sulfat.

State the definition of redox reaction and the colour of iron(II) sulphate.

[2 markah / marks]

- (ii) Berdasarkan Tindak balas II, kenal pasti halogen Y dan kation yang hadir dalam larutan perang. Terangkan mengapa tindak balas itu adalah tindak balas redoks dari segi pemindahan elektron **atau** perubahan nombor pengoksidaan.

Based on Reaction II, identify halogen Y and the cation present in the brown solution. Explain why the reaction is a redox reaction in terms of electron transfer **or** change in oxidation number.

[6 markah / marks]

- (iii) Kenal pasti logam X dan tulis persamaan kimia bagi Tindak balas I. Jika 50 cm^3 larutan ferum(II) sulfat 2.0 mol dm^{-3} dan logam X secara berlebihan digunakan, hitung jisim ferum yang terhasil.

[Jisim atom relatif : Fe = 56]

Identify metal X and write the chemical equation for Reaction I. If 50 cm^3 of 2.0 mol dm^{-3} iron(II) sulphate solution and excess metal X are used, calculate the mass of iron produced.

[Relative atomic mass : Fe = 56]

[5 markah / marks]

- (b) Seorang murid sedang menjalankan satu eksperimen untuk mengkaji elektrolisis 1.0 mol dm^{-3} asid hidroklorik di dalam makmal kimia. Selepas 10 minit, murid tersebut berasa pening dan sukar bernafas, akibat terhidu gas W berwarna kuning kehijauan yang terhasil di anod semasa elektrolisis berlaku. Kenal pasti gas W. Terangkan bagaimana gas W dihasilkan di anod dan tulis setengah persamaan bagi tindak balas ini.

A student is carried out an experiment to investigate the electrolysis of 1.0 mol dm^{-3} hydrochloric acid in a chemistry lab. After 10 minutes, the student felt dizzy and difficulty in breathing, as a result of inhaling the greenish yellow gas W produced at the anode during electrolysis. Identify gas W. Explain how gas W is produced at the anode and write the half equation for the reaction.

[4 markah / marks]

- (c) Jadual 6 menunjukkan pemerhatian bagi eksperimen untuk mengkaji kesan logam lain ke atas pengurangan paku besi. *Table 6 shows the observation for the experiment of the effects of other metals on the rusting of iron nail.*

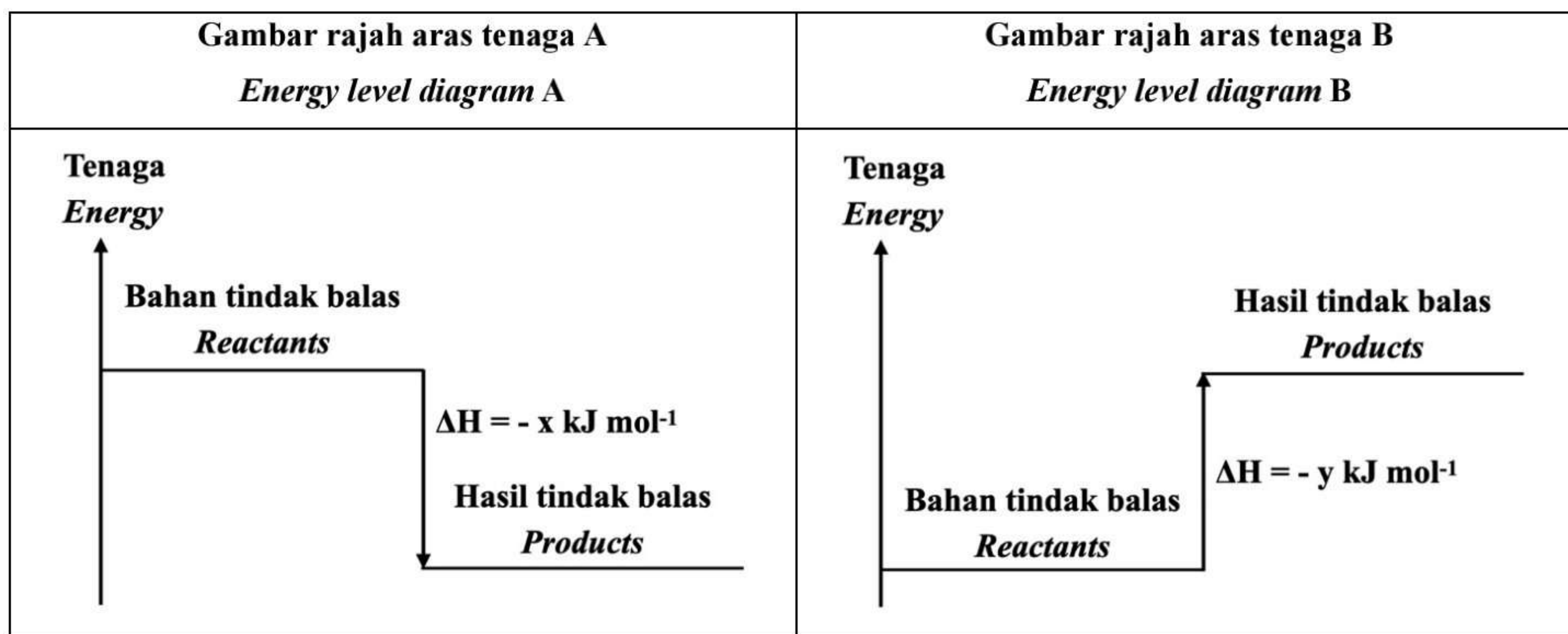
Set	Eksperimen <i>Experiment</i>	Pemerhatian <i>Observation</i>
I	Paku besi dililit dengan logam P + larutan kalium heksasianoferrat(III) + agar-agar <i>Iron nail coiled with metal P + potassium hexacyanoferrate(III) solution + agar</i>	Warna biru tua <i>Dark blue colour</i>
II	Paku besi dililit dengan logam Q + larutan kalium heksasianoferrat(III) + agar-agar <i>Iron nail coiled with metal Q + potassium hexacyanoferrate(III) solution + agar</i>	Tiada perubahan <i>No change</i>

Jadual / Table 6

Berdasarkan maklumat dalam Jadual 6, terangkan mengapa terdapat perbezaan pemerhatian antara set I dan set II.
Based on the information in Table 6, explain why there is a difference in the observation of set I and set II.

[3 markah / marks]

- 10 (a) Rajah 9 menunjukkan dua gambar rajah aras tenaga bagi tindak balas berlainan.
Diagram 9 shows two energy level diagrams for different reactions.



Rajah / Diagram 9

Berdasarkan Rajah 9, nyatakan jenis tindak balas yang berlaku dalam gambar rajah aras tenaga A dan B. Bandingkan jenis tindak balas bagi A dan B dari segi perubahan suhu, perbezaan kandungan tenaga bahan tindak balas dan hasil tindak balas, perubahan tenaga sewaktu pemecahan ikatan dan pembentukan ikatan dan berikan satu contoh bagi setiap tindak balas.

Based on Diagram 9, state the type of reaction that occurs in energy level diagrams A and B. Compare the type of reactions for A and B in terms of the change in temperature, difference in energy content of reactants and products, energy changes during bond breaking and bond formation and give one example for each reaction.

[7 markah / marks]

(b) Satu eksperimen dijalankan untuk mengkaji haba peneutralan antara 50 cm^3 larutan natrium hidroksida 1.0 mol dm^{-3} dengan 50 cm^3 asid hidroklorik 1.0 mol dm^{-3} . Suhu campuran meningkat daripada $29.0 \text{ }^\circ\text{C}$ kepada $35.5 \text{ }^\circ\text{C}$.

[Diberi muatan haba tentu larutan = $4.2 \text{ Jg}^{-1} \text{ }^\circ\text{C}^{-1}$, ketumpatan larutan = 1 g cm^{-3}]

An experiment is conducted to study the heat of neutralisation between 50 cm^3 of 1.0 mol dm^{-3} sodium hydroxide solution with 50 cm^3 of 1.0 mol dm^{-3} hydrochloric acid. The temperature of the mixture increases from $29.0 \text{ }^\circ\text{C}$ to $35.5 \text{ }^\circ\text{C}$.

[Given the specific heat capacity of solution = $4.2 \text{ Jg}^{-1} \text{ }^\circ\text{C}^{-1}$, density of solution = 1 g cm^{-3}]

(i) Nyatakan definisi bagi haba peneutralan.

State the definition of heat of neutralisation.

[1 markah / mark]

(ii) Hitung haba peneutralan.

Calculate the heat of neutralisation.

[6 markah / marks]

(iii) Nilai haba peneutralan yang diperoleh di makmal adalah lebih rendah daripada nilai teorinya. Beri sebab mengapa hal ini terjadi.

The heat of neutralisation obtained in laboratory is less than its theoretical value. Give a reason why this happened.

[1 markah / mark]

(iv) Bina gambar rajah aras tenaga bagi tindak balas itu.

Construct an energy level diagram for the reaction.

[2 markah / marks]

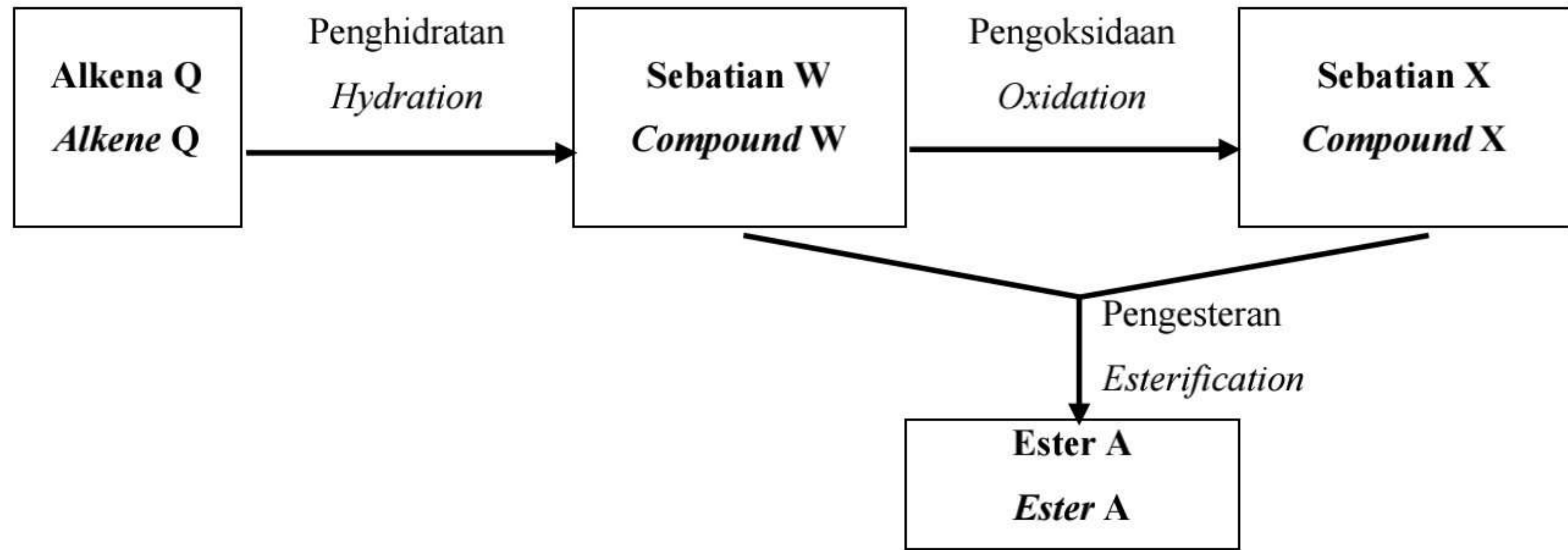
(v) Ramalkan haba peneutralan apabila larutan natrium hidroksida diganti dengan dengan larutan ammonia. Terangkan jawapan anda.

Predict the heat of neutralisation when sodium hydroxide solution is replaced by ammonia solution. Explain your answer.

[3 markah / marks]

- 11 (a) Rajah 10.1 menunjukkan penukaran sebatian organik daripada satu siri homolog kepada yang lain.

Diagram 10.1 shows the conversion of an organic compound from one homologous series to another.



Rajah / Diagram 10.1

- (i) Apakah maksud siri homolog?

What is the meaning of homologous series?

[1 markah / mark]

- (ii) Jisim molekul relatif yang mungkin bagi alkena Q adalah 28, 42 atau 56. Dengan memilih salah satu daripada jisim molekul relatif itu, tentukan formula molekul bagi alkena itu dan nyatakan nama bagi alkena itu.

[Jisim atom relatif: H= 1; C= 12]

The possible relative molecular masses of alkene Q are 28, 42 or 56. By choosing any one of the relative molecular masses, determine the molecular formula for the alkene and state the name of the alkene.

[Relative atomic mass : H = 1, C = 12]

[3 markah / marks]

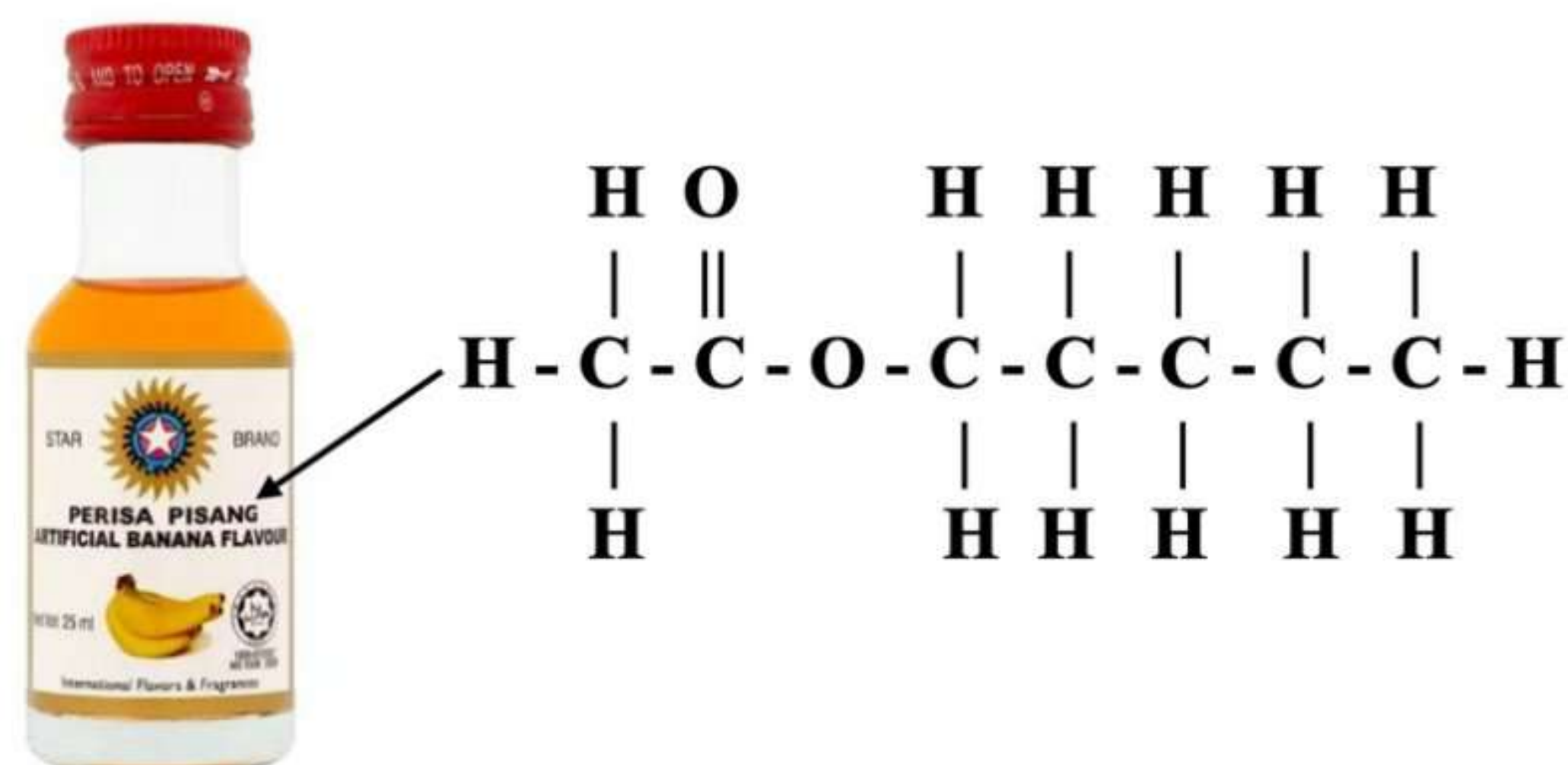
- (iii) Berdasarkan Rajah 10.1 dan jawapan daripada 11(a)(ii), nyatakan nama dan lukiskan formula struktur sebatian W dan sebatian X. Tuliskan persamaan kimia untuk menunjukkan penukaran sebatian W kepada sebatian X.

Based on Diagram 10.1 and the answer from 11(a)(ii), state the names and draw the structural formulae of compound W and compound X. Write the chemical equation to show the conversion of compound W to compound X.

[6 markah / marks]

- (b) Rajah 10.2 menunjukkan formula struktur bagi perisa pisang tiruan.

Diagram 10.2 shows the structural formula of artificial banana flavour.



Rajah / Diagram 10.2

Dengan menggunakan bahan yang sesuai, terangkan secara ringkas bagaimana anda boleh menyediakan perisa pisang tersebut di dalam makmal. Jawapan anda haruslah mengandungi persamaan kimia yang terlibat.

By using suitable substances, explain briefly how you can prepare the banana flavour in the laboratory. Your answer should include the chemical equation involved.

[7 markah / marks]

(c) Rajah 10.3 menunjukkan dua jenis pembasmi kuman tangan yang mengandungi peratusan alkohol yang berbeza.

Diagram 10.3 shows two types of hand sanitisers that contains different percentage of alcohol.



Pembasmi kuman tangan A
Kandungan alkohol : 75%
Hand sanitiser A
Alcohol content : 75%



Pembasmi kuman tangan B
Kandungan alkohol : 55%
Hand sanitiser B
Alcohol content : 55%

Rajah / Diagram 10.3

Berdasarkan Rajah 10.3, pilih pembasmi kuman tangan yang akan anda gunakan. Wajarkan pilihan anda.

Based on Diagram 10.3, choose the hand sanitiser that you will use. Justify your choice.

[3 markah / marks]