

**4541/1**

**Kimia  
September  
Kertas 1  
2008  
1½ jam**

**Nama Pelajar : .....**

**Tingkatan : .....**



**JABATAN PELAJARAN KELANTAN  
DENGAN KERJASAMA  
PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA  
SEKOLAH MENENGAH MALAYSIA  
CAWANGAN KELANTAN**

**PEPERIKSAAN PERCUBAAN  
SIJIL PELAJARAN MALAYSIA 2008**

**KIMIA  
KERTAS 1**

**Masa : Satu Jam Lima Belas Minit**

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

- 1. Kertas soalan ini adalah dalam dwibahasa*
- 2. Setiap soalan mengandungi kedua-dua bahasa Inggeris dan bahasa Melayu. Bahagian atas dalam bahasa Inggeris dan diikuti di bawahnya oleh bahasa Melayu*
- 3. Calon dikehendaki membaca maklumat di halaman 2.*

**Kertas soalan ini mengandungi 36 halaman bercetak.**

**[ Lihat sebelah  
SULIT**

- 1 The proton number of an atom is referring to the number of  
*Nombor proton bagi suatu atom merujuk kepada bilangan*

- A proton  
*proton*
- B neutron  
*neutron*
- C electron  
*elektron*
- D proton and neutron  
*proton dan neutron*

- 2 Which of the following chemical formula of the compound is true?  
*Antara formula kimia sebatian berikut yang manakah betul?*

	Compound <i>Sebatian</i>	Chemical formula <i>Formula kimia</i>
A	Barium nitrate <i>Barium nitrat</i>	$\text{BaNO}_3$
B	Ammonium nitrate <i>Ammonium nitrat</i>	$(\text{NH}_4)_2\text{NO}_3$
C	Lead (II) sulphate <i>Plumbum (II) sulfat</i>	$\text{PbSO}_4$
D	Aluminium oxide <i>Aluminium oksida</i>	$\text{AlO}_3$

- 3 Which of the following elements are in Group 18 of the Periodic Table of Elements?  
*Antara berikut, unsur yang manakah dalam Kumpulan 18 dalam Jadual Berkala Unsur?*

- A Helium and krypton  
*Helium dan kripton*
- B Hydrogen and oxygen  
*Hidrogen dan oksigen*
- C Oxygen and krypton  
*Oksigen dan kripton*
- D Helium, hydrogen and oxygen  
*Helium, hidrogen dan oksigen*

- 4 Diagram 1 shows six elements in Period 4 of the Periodic Tables. Which of the following is **not true** about the elements? **4**

Rajah 1 menunjukkan enam unsur dalam Kala 4 Jadual Berkala. Antara berikut, yang manakah tidak **benar** tentang unsur-unsur itu?

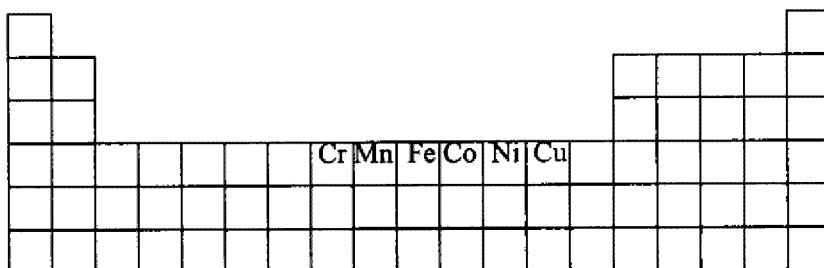


Diagram 1  
Rajah 1

- A They do not conduct heat  
*Mereka tidak mengkonduksi haba*
- B They have high melting point  
*Mereka mempunyai takat lebur yang tinggi*
- C They are able to form coloured compounds  
*Mereka boleh membentuk sebatian yang berwarna*
- D They are able to show different oxidation numbers in their compounds  
*Mereka boleh menunjukkan nombor pengoksidaan yang berlainan dalam sebatiananya*

- 5 Diagram 2 shows the electron arrangement of a compound formed between atoms X and Y.

*Rajah 2 menunjukkan susunan elektron bagi sebatian yang terbentuk antara atom X dengan atom Y.*

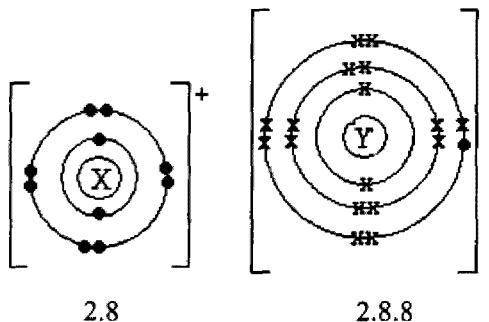


Diagram 2  
*Rajah 2*

Which of the following statements is **true** about the compound?

*Antara pernyataan berikut yang manakah benar tentang sebatian itu?*

- A The compound has a low boiling point

*Sebatian itu mempunyai takat didih yang rendah*

- B The compound dissolved in organic solvent

*Sebatian itu larut dalam pelarut organik*

- C The compound is formed by sharing the electron

*Sebatian itu terbentuk melalui perkongsian elektron*

- D The compound can conduct electricity in a molten state

*Sebatian itu boleh mengkonduksi elektrik dalam keadaan leburan*

- 6 Which of the following substances is an electrolyte?

*Antara bahan berikut, yang manakah adalah elektrolit?*

- A Ethanol

*Etanol*

- B Dilute sulphuric acid

*Asid sulfurik cair*

- C Molten naphtelene

*Leburan naftalena*

- D Ethanoic acid glacial

*Asid etanoik glasial*

[ Lihat sebelah  
SULIT

7 Which of the following is true about the strong acid?

*Di antara berikut yang manakah benar tentang asid?*

- A Unable to neutralized alkali  
*Tidak boleh meneutralkan alkali*
- B The pH value is more than 7  
*Nilai pH lebih daripada 7*
- C Able to change red litmus paper to blue  
*Boleh menukarkan kertas litmus merah ke biru*
- D Ionised completely in water to produced hydrogen ion  
*Mengion lengkap dalam air menghasilkan ion hidrogen*

8 What are the products of the reaction between ethanoic acid and sodium carbonate?

*Apakah hasil tindak balas di antara asid etanoik dan natrium karbonat?*

- I Water  
*Air*
  - II Ethyl ethanoate  
*Etil etanoat*
  - III Carbon dioxide  
*Karbon dioksida*
  - IV Sodium ethanoate  
*Natrium etanoat*
- A I and III only  
*I dan III sahaja*
  - B II and IV only  
*II dan IV sahaja*
  - C I, II and III only  
*I, II dan III sahaja*
  - D I, III and IV only  
*I, III and IV sahaja*

- 9 Which of the following ions form white precipitate that dissolves in excess ammonia solution?

*Di antara ion-ion berikut yang manakah menghasilkan mendakan putih yang larut dalam larutan ammonia berlebihan?*

- A  $Mg^{2+}$
- B  $Al^{3+}$
- C  $Zn^{2+}$
- D  $Pb^{2+}$

- 10 Which diagram shows the structure of bronze?

*Rajah yang manakah mewakili struktur bagi gangsa?*

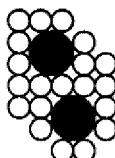
A



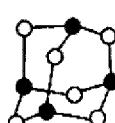
B



C



D



- 11 Ceramic is suitable for making the exterior of space shuttle because ceramic.

*Seramik sesuai digunakan untuk membuat bahagian luar kapal angkasa kerana*

- A can store charges  
*boleh menyimpan cas*
- B has high melting point  
*mempunyai takat lebur tinggi*
- C can resist to chemical corrosion  
*tahan terhadap kakisan kimia*
- D can withstand high pressure and heat  
*tahan terhadap haba dan tekanan tinggi*

- 12 Which of the following factor affects the rate of reaction?

Antara berikut, yang manakah faktor yang mempengaruhi kadar tindak balas?  
8

- A Time  
*Masa*
- B Reagent  
*Bahan uji*
- C Apparatus  
*Alat radas*
- D Temperature  
*Suhu*

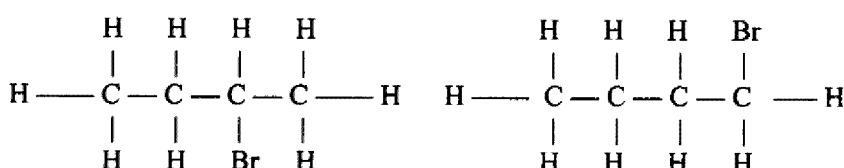
- 13 Which is the slowest reaction?

Yang manakah tindak balas paling perlahan?

- A The reaction between acid and base  
*Tindak balas antara asid dan bas*
- B Fermentation of glucose to form ethanol  
*Penapaian glukosa kepada etanol*
- C Esterification of ethanol and propanoic acid  
*Pengesteran etanol dan acid propanoik*
- D Precipitation of lead(II) chloride  
*Pemendakan plumbum(II) klorida*

- 14 The structural formulae of two isomers are as follows.

*Formula struktur dua isomer adalah seperti berikut.*



Which of the following substance has both isomers?

*Antara bahan berikut yang manakah mempunyai kedua-dua isomer itu?*

- A Bromoethane  
*Bromoetana*
- B Bromopropane  
*Bromopropana*
- C Bromobutane  
*Bromobutana*
- D Bromopentane  
*Bromopentana*

- 15 What are the products formed when ethanol burns completely in excess air?

*Apakah hasil-hasil yang terbentuk apabila etanol terbakar dengan lengkap dalam udara berlebihan?*

- A Water and carbon dioxide gas  
*Air dan gas karbon dioksida*
- B Water, carbon and carbon dioxide gas  
*Air, karbon dan gas karbon dioksida*
- C Water, carbon monoxide gas and carbon dioxide gas  
*Air, gas karbon monoksida dan gas karbon dioksida*
- D Water, carbon, carbon monoxide gas and carbon dioxide gas  
*Air, karbon, gas karbon monoksida dan gas karbon dioksida*

- 16 Diagram 3 shows the structural formula of an ester molecule .  
 Rajah 3 menunjukkan formula struktur bagi satu molekul ester .

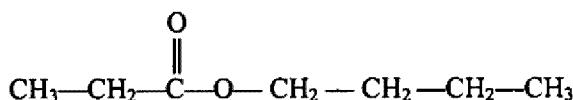


Diagram 3  
 Rajah 3

What is the name of the ester?

*Apakah nama ester ini ?*

- A Butyl ethanoate  
*Butil etanoat*
- B Propyl ethanoate  
*Propil etanoat*
- C Propyl butanoate  
*Propil butanoat*
- D Butyl propanoate  
*Butil propanoat*

- 17 Which of the followings are oxidizing agent?

*Antara berikut yang manakah agen pengoksidaan?*

- I Magnesium  
*Magnesium*
  - II Bromine water  
*Air bromin*
  - III Potassium iodide solution  
*Kalium iodide*
  - IV Acidified potassium dichromate (VI)  
*Kalium dikromat(VI) berasid*
- A I and III only  
*I dan III sahaja*
  - B II and IV only  
*II dan IV sahaja*
  - C I,II and III only  
*I,II dan III sahaja*
  - D I,II and IV only  
*I,II dan IV sahaja*

- 18 Which of the following is a redox reaction?

*Di antara berikut yang manakah tindak balas redok?*

11

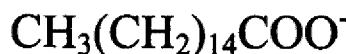
- A Esterification  
*Pengesteran*
- B Neutralization  
*Peneutralan*
- C Displacement  
*Penyesaran*
- D Precipitation  
*Pemendakan*

- 19 Which of the following is the function of an analgesic?

*Di antara berikut yang manakah fungsi analgesic?*

- A To relieve pain  
*Untuk menghilangkan kesakitan*
- B To reduce fatigue  
*Untuk mengurangkan kelesuan*
- C To reduce tension  
*Untuk mengurangkan ketegangan*
- D To calm down the emotion of a patient  
*Untuk menenangkan emosi pesakit*

- 20 The anion shows a part of a structural formula of a soap molecule



Which of the following is the name of that part

- A Lauric  
*Laurik*
- B Glyserol  
*Gliserol*
- C Palmitate  
*Palmitat*
- D Alkylbenzene  
*Alkilbenze*

- 21 Diagram 4 shows the structure of atom of an element.  
*Rajah 4 menunjukkan susunan atom bagi suatu unsur.*

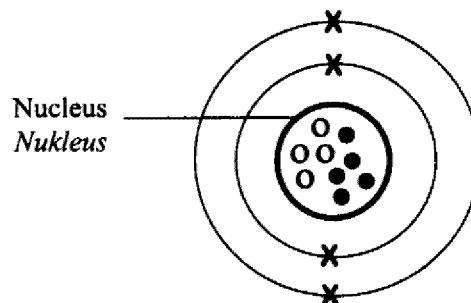


Diagram 4  
*Rajah 4*

What is the number of proton, electron and neutron in this element?

*Berapakah bilangan proton, elektron dan neutron dalam unsur ini?*

	Proton <i>Proton</i>	Electron <i>Elektron</i>	Neutron <i>Neutron</i>
A	4	4	5
B	4	5	9
C	5	4	4
D	9	4	4

- 22 The statement below describes the particles of substance X.

Pernyataan di bawah menerangkan zarah-zarah dalam bahan X.

- The particles are far apart from each other.  
*Zarah-zarah adalah berjauhan antara satu sama lain.*
- Forces of attraction between particles are weak.  
*Daya tarikan antara zarah adalah lemah.*
- The particles have high kinetic energy and move randomly.  
*Zarah-zarah mempunyai tenaga kinetik yang tinggi dan bergerak rawak*

What is the state of matter for substance X?

Apakah keadaan jirim bagi bahan X

- A Gas  
*Gas*
- B Solid  
*Pepejal*
- C Liquid  
*Cecair*
- D Liquid and solid  
*Cecair dan pepejal*

- 23 Diagram 5 shows the set-up of the apparatus used to determine the empirical formula of a metal oxide.

Rajah 5 menunjukkan susunan radas untuk menentukan formula empirik suatu oksida logam

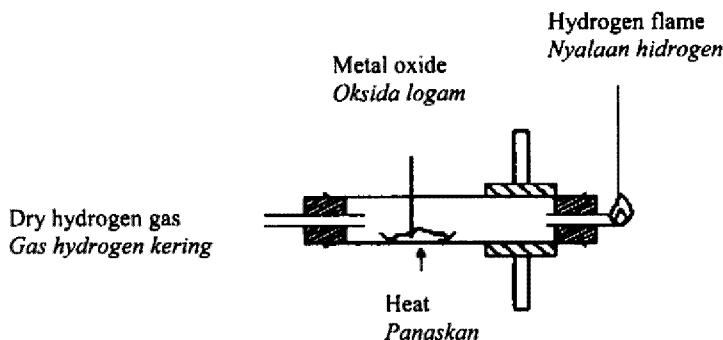


Diagram 5  
Rajah 5

Which one of the following metal oxides is suitable to be used in the experiment?

Antara oksida logam berikut yang manakah sesuai digunakan dalam eksperimen?

- A Magnesium oxide  
*Magnesium oksida*
- B Aluminium oxide  
*Aluminium oxide*
- C Calcium oxide  
*Kalsium oksida*
- D Copper(II) oxide  
*Kuprum (II) oksida*

- 24 Table 1 shows the information about ~~two~~ types of particle.

*Jadual 1 menunjukkan maklumat bagi dua jenis zarah .*

Particle <i>Zarah</i>	Proton number <i>Nombor proton</i>	Electron arrangement <i>Susunan elektron</i>
X	9	2.8
Y	17	2.8.8

Table 1

*Jadual 1*

Based on the information in the table , both particles X and Y are

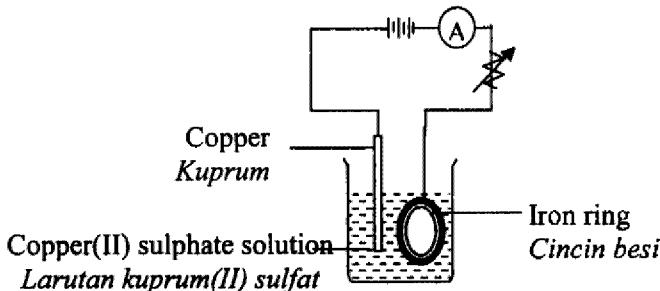
*Berdasarkan maklumat dalam jadual , zarah X dan zarah Y adalah*

- A inert gas  
*gas adi*
- B negative ions  
*ion negative*
- C atom of metals  
*atom logam*
- D isotopes of the same element  
*isotop unsur yang sama.*

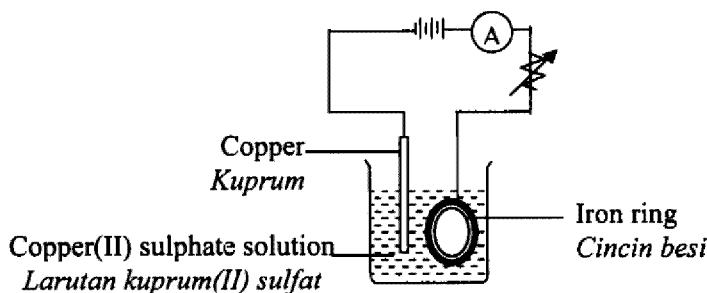
- 25 Which of the following set-up of apparatus is suitable to electroplate iron ring with copper?

Antara susunan radas berikut, yang manakah sesuai untuk menyadurkan cincin besi dengan kuprum?

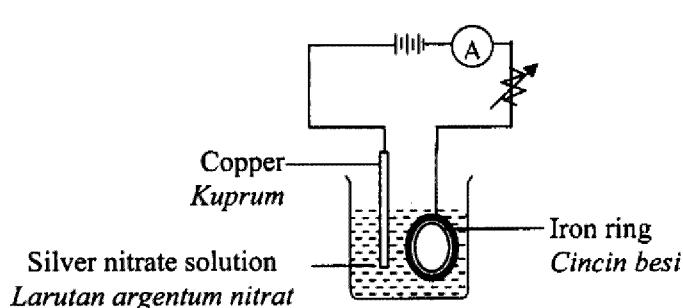
A



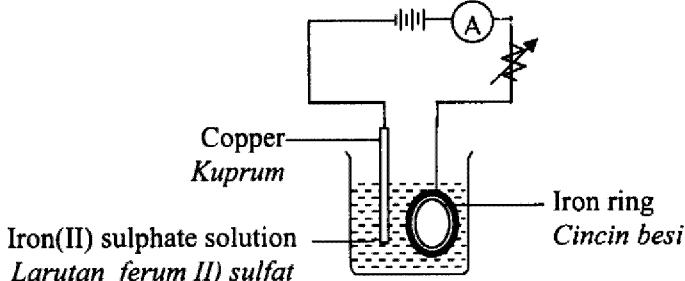
B



C



D



26 Diagram 6 shows the set up of the apparatus of a chemical cell.

Rajah 6 menunjukkan susunan radas sebuah sel kimia.

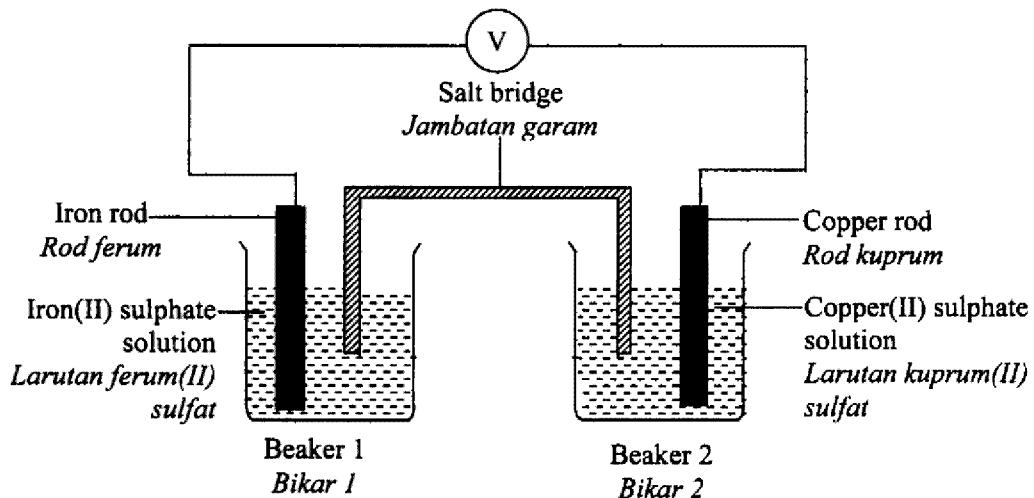


Diagram 6  
Rajah 6

Which of the following occurs in the chemical cell?

Antara berikut yang manakah berlaku dalam sel kimia itu?

- A The iron rod becomes thicker  
*Rod ferum menjadi lebih tebal*
- B The copper rod becomes thinner  
*Rod kuprum menjadi lebih nipis*
- C The colour of the solution in beaker 1 changes from green to brown  
*Warna larutan dalam bikar 1 bertukar dari hijau ke perang*
- D The intensity of the blue colour of copper(II) sulphate solution decreases  
*Keamatan warna biru larutan kuprum (II) sulfat berkurang*

- 27 Diagram 7 shows the set up of the apparatus of a simple chemical cell.  
*Rajah 7 menunjukkan susunan radas sebuah sel kimia ringkas.*

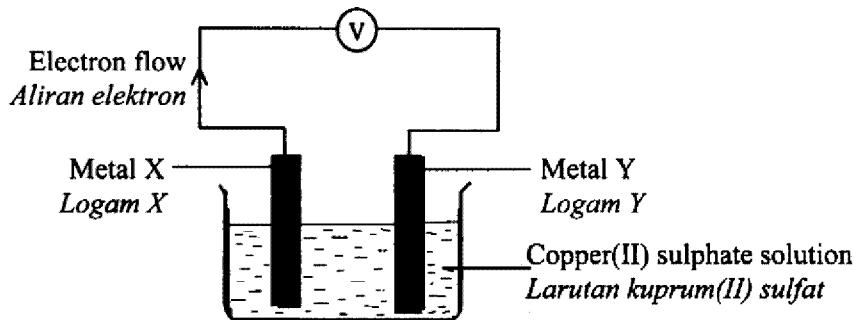


Diagram 7  
*Rajah 7*

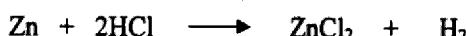
What are metal X and Y?

*Apakah logam X dan logam Y?*

- |   | Metal X<br><i>Logam X</i>     | Metal Y<br><i>Logam Y</i>     |
|---|-------------------------------|-------------------------------|
| A | Aluminium<br><i>Aluminium</i> | Magnesium<br><i>Magnesium</i> |
| B | Lead<br><i>Plumbum</i>        | Aluminium<br><i>Aluminium</i> |
| C | Aluminium<br><i>Aluminium</i> | Copper<br><i>Kuprum</i>       |
| D | Lead<br><i>Plumbum</i>        | Zinc<br><i>Zink</i>           |

- 28 The following equation represents the reaction of preparing zinc chloride salt,  $\text{ZnCl}_2$ .

Persamaan berikut mewakili tindak balas menyediakan garam zink klorida



Which substances can be used to replace zinc?

Bahan-bahan yang manakah boleh digunakan untuk mengganti zink?

- I Zinc oxide  
*Zink oksida*
  - II Zinc hydroxide  
*Zink hidroksida*
  - III Zinc carbonate  
*Zink karbonat*
  - IV Zinc nitrate  
*Zink nitrat*
- 
- A I and II only  
*I dan II sahaja*
  - B II and III only  
*II dan III sahaja*
  - C I, II and III only  
*I, II dan III sahaja*
  - D I, II, III and IV  
*I, II, III, dan IV sahaja*

- 29 A plastic bag is made from a polymer called polyethene. Which of the following is the property of plastic bag? 20

*Beg plastik diperbuat daripada polimer yang dipanggil polietena. Di antara berikut yang manakah sifat bagi beg plastik tersebut ?*

- A Biodegradable  
*Terbiodegradasi*
- B Non flammable  
*Tidak mudah terbakar*
- C Good insulator  
*Penebat yang baik*
- D High tensile strength  
*Kekuatan regangan yang tinggi*

- 30 Diagram 8 shows the energy profile diagram.

*Rajah 8 menunjukkan gambarajah profil tenaga..*

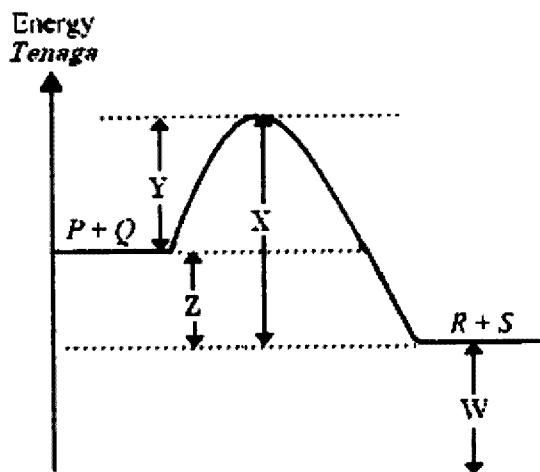


Diagram 8

Rajah 8

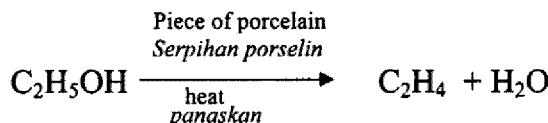
Which of the following represents the activation energy?

*Antara berikut yang manakah mewakili tenaga pengaktifan?*

- |   |   |
|---|---|
| A | W |
| B | X |
| C | Y |
| D | Z |

- 31** The following chemical equation shows the conversion of ethanol to ethene .

*Persamaan kimia berikut menunjukkan pertukaran etanol ke etena.*



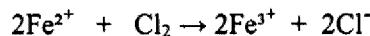
What is the name of the process shown by the above equation?

*Apakah nama proses yang ditunjukkan oleh persamaan diatas?*

- A Oxidation  
*Pengoksidaan*
- B Dehydration .  
*Pendehidratan*
- C Esterification  
*Pengesteran*
- D Fermentation  
*Penapaian*

- 32** The following ionic equation shows a redox reaction.

*Persamaan ion di bawah mewakili satu tindak balas redoks.*



Which of the following is **true** about the reaction?

*Antara pernyataan berikut, yang manakah benar berkaitan tindakbalas di atas?*

- A Iron(III) ion,  $\text{Fe}^{3+}$  is reduced  
*Ion ferum(III),  $\text{Fe}^{3+}$  diturunkan*
- B Iron(II) ion,  $\text{Fe}^{2+}$  is oxidised  
*Ion ferum(II),  $\text{Fe}^{2+}$  dioksidakan*
- C Chlorine water is a reducing agent  
*Air bromin merupakan agen penurunan*
- D Chloride ion is an oxidising agent  
*Ion bromida merupakan agen pengoksidaan*

- 33 Diagram 9 shows the set of apparatus of an experiment to investigate the redox reaction in terms of the electron transfer at a distance.

Rajah 9 menunjukkan susunan radas satu eksperimen untuk mengkaji tindak balas redoks berdasarkan pemindahan elektron pada satu jarak.

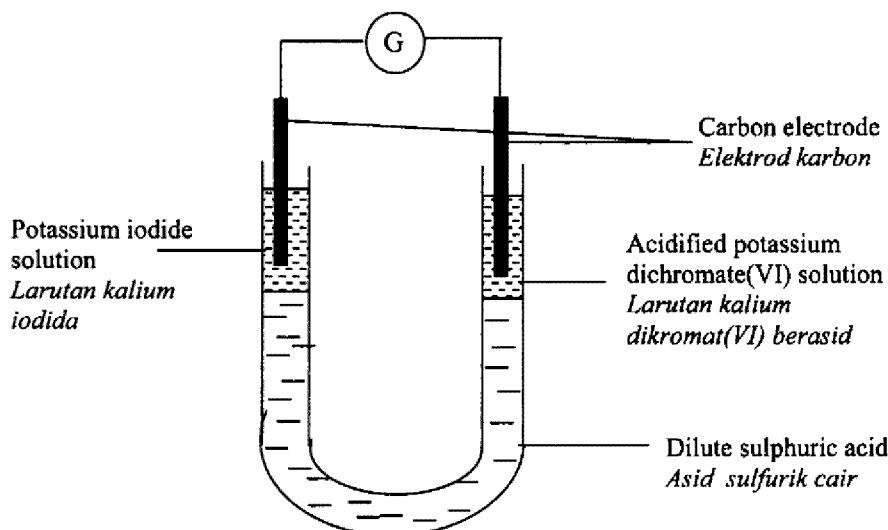


Diagram 9  
Rajah 9

Which of the following statements is **true** about the experiment?

*Antara pernyataan berikut yang manakah benar tentang eksperimen itu*

- A Iodide ion is the reducing agent  
*Ion iodida bertindak sebagai agen penurunan.*
- B Oxidation number of iodine decreases from 0 to -1  
*Nombor pengoksidaan iodin menurun dari 0 ke -1*
- C Oxidation number of chromium increases from +3 to +6  
*Nombor pengoksidaan kromium bertambah dari +3 ke +6*
- D Electrons flow from potassium iodide solution to acidified potassium dichromate(VI) through sulphuric acid  
*Elektron mengalir dari larutan kalium iodida ke larutan kalium dikromat(VI) berasid melalui asid sulfurik*

- 34 Diagram 10 shows the energy level diagram for the precipitation reaction of silver chloride.

23

Rajah 10 menunjukkan gambarajah aras tenaga bagi tindak balas pemendakan argentum klorida

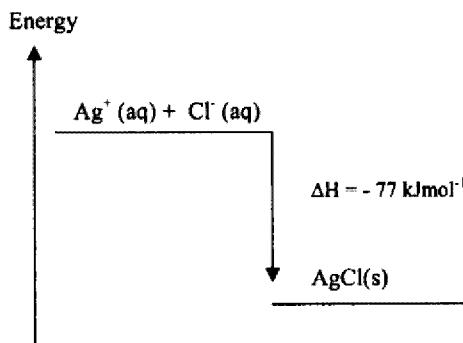


Diagram 10

Rajah 10

Which of the following is **true** about the reaction?

*Di antara berikut, yang manakah **benar** tentang tindak balas di atas?*

	Type of reaction <i>Jenis tindak balas</i>	Heat change <i>Perubahan haba</i>
A	Endothermic <i>Endotermik</i>	Heat is released <i>Haba dibebaskan</i>
B	Exothermic <i>Eksotermik</i>	Heat is absorbed <i>Haba diserap</i>
C	Endothermic <i>Endotermik</i>	Heat is absorbed <i>Haba diserap</i>
D	Exothermic <i>Eksotermik</i>	Heat is released <i>Haba dibebaskan</i>

- 35 Table 2 shows the mass of elements Y and O in Y oxide and their relative atomic mass respectively. What is the empirical formula for this oxide?

Jadual di bawah menunjukkan jisim unsur Y dan O di dalam oksida Y dan jisim atom relatif masing-masing. Apakah formula empirik oksida ini?

Element <i>Unsur</i>	Y	O
Mass <i>Jisim</i>	5.6	0.8
Relative atomic mass <i>Jisim Atom relatif</i>	56	16

Table 2  
Jadual 2

- A  $Y_2O$
- B  $Y_2O$
- C  $YO_5$
- D  $Y_2O_5$

- 36 Diagram 11 shows two balloons filled with oxygen gas and hydrogen gas respectively.

Rajah 11 menunjukkan dua belon yang masing-masing diisi dengan gas oksigen dan gas hidrogen.

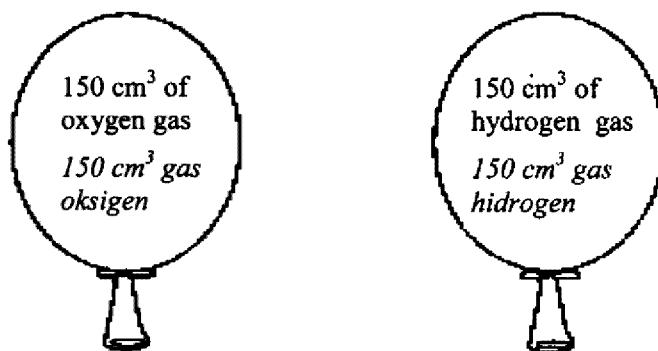


Diagram 11  
Rajah 11

Which of the following statements is **true** about the two gases?

*Antara pernyataan yang berikut yang manakah benar tentang dua gas itu?*

- A The number of moles of oxygen gas and hydrogen gas is equal  
*Bilangan mol gas oksigen dan hidrogen adalah sama*
- B The number of moles of oxygen gas is greater than hydrogen gas  
*Bilangan mol gas oksigen lebih besar daripada gas hidrogen*
- C The number of oxygen gas molecules is greater than hydrogen gas molecules  
*Bilangan molekul gas oksigen lebih besar daripada gas hidrogen*
- D The number of oxygen gas molecules is fewer than hydrogen gas molecules  
*Bilangan mol gas oksigen lebih sedikit daripada gas hidrogen*

- 37 The chemical formula for potassium hexacyanoferrate(III) is  $K_3Fe(CN)_6$ .

What is its relative formula mass? **26**

[Relative atomic mass: C = 12; N = 14; K = 39; Fe = 56]

*Formula kimia untuk kalium heksasianoferat (III) ialah  $K_3Fe(CN)_6$*

*Apakah jisim formula relativnya?*

*[Jisim atom relativ: C = 12; N = 14; K = 39; Fe = 56]*

A 121

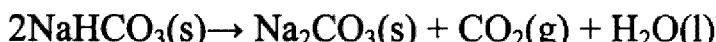
B 199

C 251

D 329

- 38 Sodium hydrogen carbonate decomposes on heating according to the following equation:

*Natrium hidrogen karbonat terurai oleh haba mengikut persamaan berikut:*



If 16.8 g of sodium hydrogen carbonate is used, what is the mass of sodium carbonate produced?

[Relative atomic mass: H = 1; C = 12; O = 16; Na = 23]

*Jika 16.8 g natrium hidrogen karbonat digunakan, berapakah jisim natrium karbonat yang terhasil?*

*[Jisim atom relativ: H = 1; C = 12; O = 16; Na = 23]*

A 5.3 g

B 10.6 g

C 21.2 g

D 42.4 g

- 39 A restaurant owner wants to use colourful electric lamps to attract customers.  
*Seorang pemilik restoran ingin menggunakan lampu elektrik yang berwarna-warni untuk menarik pelanggan.*

Which of the following substances **A**, **B**, **C** or **D** in the Periodic Tables is suitable to be used in the lamps?

*Antara unsur **A**, **B**, **C** dan **D** dalam Jadual Berkala berikut yang manakah sesuai digunakan untuk lampu itu?*

<b>A</b>							<b>C</b>	<b>D</b>
	<b>B</b>							

- 40 The electron arrangement of an atom of *M* is 2.8.1 and the electron arrangement of an atom of *X* is 2.6. Elements *M* and *X* react to form a compound.  
 Which of the following is **true** about the reaction?

*Susunan elektron atom *M* ialah 2.8.1 dan susunan elektron atom *X* ialah 2.6. Unsur *M* dan unsur *X* bertindak balas membentuk satu sebatian.*

*Antara yang berikut, yang manakah benar tentang tindak balas itu?*

- A Atom *X* donates 2 electrons  
*Atom X menderma 2 elektron*
- B Atom *M* receives 1 electron  
*Atom M menerima 1 elektron*
- C An ionic compound formed has chemical formula  $M_2X$ .  
*Suatu sebatian ion terhasil dan mempunyai formula kimia  $M_2X$ .*
- D The compound formed has chemical formula  $MX$   
*Sebatian yang terbentuk mempunyai formula kimia  $MX$*

- 41 Diagram 12 shows set-up of apparatus of an experiment where electrode pair X and Y, are different metal, dipped into solution of <sup>28</sup>Copper(II) sulphate.

Rajah 12 menunjukkan susunan radas bagi satu eksperimen di mana pasangan elektrod X dan Y, ialah logam yang berlainan, dicelupkan dalam larutan kuprum(II) sulfat.

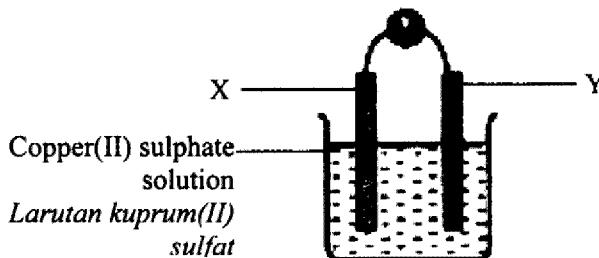


Diagram 12  
Rajah 12

Table 3 shows voltmeter reading which is obtained when this experiment is repeated by using different electrode pair of X and Y.

Jadual 3 menunjukkan bacaan voltmeter yang diperoleh apabila eksperimen diulangi dengan menggunakan pasangan elektrod, X dan Y yang berlainan.

Electrode Elektrod		Voltmeter reading Bacaan voltmeter (V)
X	Y	
Copper <i>Kuprum</i>	Iron <i>Ferum</i>	0.8
Zinc <i>Zink</i>	Magnesium <i>Magnesium</i>	a
Iron <i>Ferum</i>	Zinc <i>Zink</i>	0.2
Copper <i>Kuprum</i>	Magnesium <i>Magnesium</i>	2.6

Table 3  
Jadual 3

What is the value of a?

Berapakah nilai a?

- A 3.6
- B 2.4
- C 1.6
- D 1.4

- 42 Magnesium chloride solution,  $0.001 \text{ mol dm}^{-3}$  is electrolyzed using carbon electrodes. Which are the half equations for the reactions occurring at the anode and the cathode?

*Larutan magnesium klorida,  $0.001 \text{ mol dm}^{-3}$  dielektrolis menggunakan elektrod karbon. Yang manakah setengah persamaan bagi tindak balas yang berlaku di anod dan di katod*

Anode <i>Anod</i>	Cathode <i>Katod</i>
----------------------	-------------------------

- |   |  |
|---|--|
| A $4\text{OH}^- \rightarrow \text{O}_2 + 2\text{H}_2\text{O} + 4\text{e}$ | $\text{Mg}^{2+} + 2\text{e} \rightarrow \text{Mg}$ |
| B $4\text{OH}^- \rightarrow \text{O}_2 + 2\text{H}_2\text{O} + 4\text{e}$ | $2\text{H}^+ + 2\text{e} \rightarrow \text{H}_2$   |
| C $2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}$                      | $2\text{H}^+ + 2\text{e} \rightarrow \text{H}_2$   |
| D $2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}$                      | $\text{Mg}^{2+} + 2\text{e} \rightarrow \text{Mg}$ |

- 43 Sulphuric acid is used as an electrolyte in a car battery has a concentration of  $0.5 \text{ mol dm}^{-3}$ . How many moles of sulphuric acid are there in  $200 \text{ cm}^3$ ?

*Asid sulfurik digunakan sebagai elektrolit di dalam bateri kereta dengan kepekatan  $0.5 \text{ mol dm}^{-3}$ .*

*Berapakah bilangan mol asid sulfurik yang terdapat di dalam  $200 \text{ cm}^3$ ?*

- A 0.05
- B 0.1
- C 0.2
- D 1

- 44 Diagram 13 shows the set-up of apparatus for titration of sodium hydroxide solution with sulphuric acid.

Rajah 13 menunjukkan susunan radas untuk pentitratan larutan natrium hidroksida dengan asid sulfurik

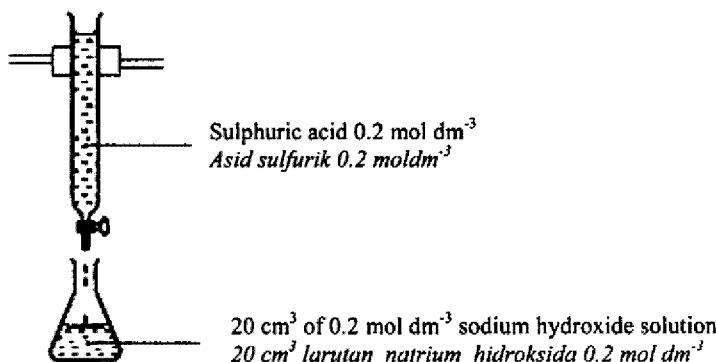


Diagram 13

Rajah 13

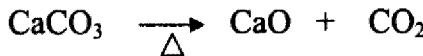
What is the volume of acid at the end point of the titration

Berapakah isipadu asid pada takat akhir pentitratan

- A  $10\text{ cm}^3$
- B  $20\text{ cm}^3$
- C  $30\text{ cm}^3$
- D  $40\text{ cm}^3$

- 45 The following equation shows the decomposition reaction of calcium carbonate salt, when heated at room temperature and pressure.

*Persamaan berikut menunjukkan tindak balas penguraian garam kalsium karbonat, apabila dipanaskan pada suhu dan tekanan bilik*



How many moles of calcium carbonate are needed to produce 2.8g of calcium oxide,  
*Berapakah bilangan mol kalsium karbonat yang diperlukan untuk menghasilkan 2.8g kalsium oksida.*

[Relative atomic mass: C= 12, O= 16, Ca= 40]  
*[Jisim atom relative : C= 12, O= 16, Ca= 40]*

- A 0.03
- B 0.05
- C 0.08
- D 0.09

- 46 Table 4 shows the total volume of oxygen, collected in the decomposition of hydrogen peroxide catalyzed by manganese(IV) oxide.

*Jadual 4 menunjukkan jumlah isipadu oksigen yang dikumpul dalam penguraian hidrogen peroksida yang dimangkinkan oleh mangan(IV) oxida.*

Time (min) Masa	0	1	2	3	4
Volume of gas Isipadu gas (cm <sup>3</sup> )	0	12.20	20.60	28.70	36.60

Table 4  
*Jadual 4*

What is the average rate of reaction during the second minute?  
*Berapakah kadar tindak balas purata dalam minit kedua?*

- A  $0.13 \text{ cm}^3 \text{ s}^{-1}$
- B  $0.14 \text{ cm}^3 \text{ s}^{-1}$
- C  $0.17 \text{ cm}^3 \text{ s}^{-1}$
- D  $0.20 \text{ cm}^3 \text{ s}^{-1}$

- 47 Two experiments were carried out to study the rate of reaction between marble chips and hydrochloric acid to produce carbon dioxide gas.
- Table 5 shows the results of the experiments.

Dua eksperimen telah dijalankan untuk mengkaji kadar tindak balas antara ketulan marmar dan asid hidroklorik untuk menghasilkan gas karbon dioksida.

Jadual 5 menunjukkan keputusan eksperimen.

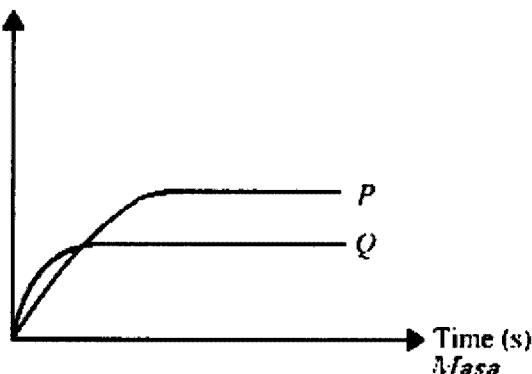
Experiment Eksperimen	Substances Bahan
P	Excess marble chips with $200 \text{ cm}^3$ of $2.0 \text{ mol dm}^{-3}$ hydrochloric acid <i>Ketulan marmar berlebihan dengan <math>200 \text{ cm}^3</math> asid hidroklorik <math>2.0 \text{ mol dm}^{-3}</math></i>
Q	Excess marble chips with $400 \text{ cm}^3$ of $1.0 \text{ mol dm}^{-3}$ hydrochloric acid <i>Ketulan marmar berlebihan dengan <math>400 \text{ cm}^3</math> asid hidroklorik <math>1.0 \text{ mol dm}^{-3}</math></i>

Table 5  
Jadual 5

Which of the following graph represents the two experiments?

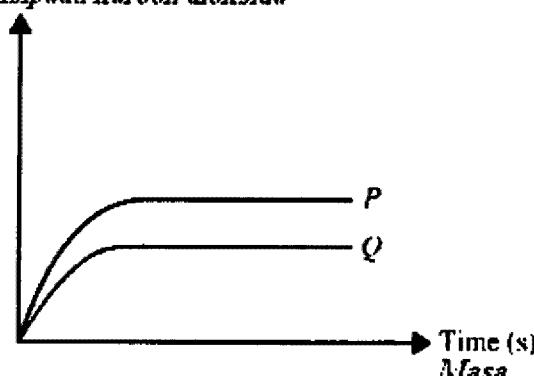
Antara berikut yang manakah mewakili keputusan bagi kedua-dua eksperimen itu

- A Volume of carbon dioxide ( $\text{cm}^3$ )  
*Ispadan karbon dioksida*

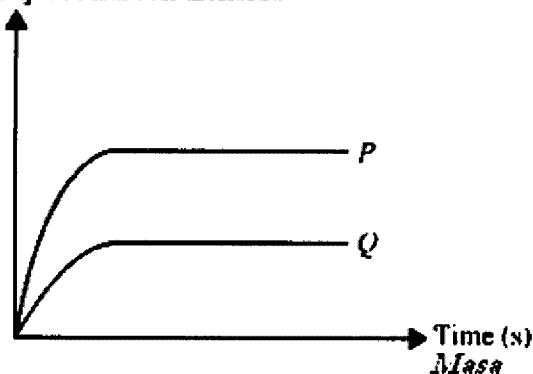


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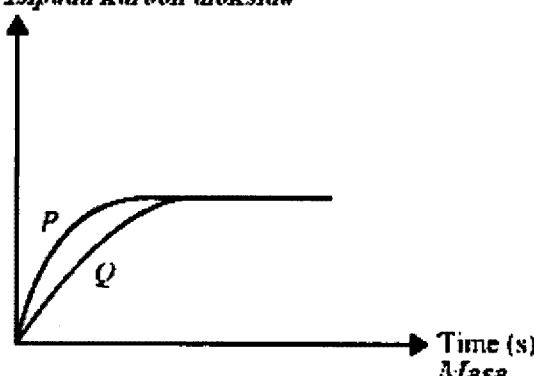
- B Volume of carbon dioxide ( $\text{cm}^3$ )  
*Isipadu karbon dioksida*



- C Volume of carbon dioxide ( $\text{cm}^3$ )  
*Isipadu karbon dioksida*



- D Volume of carbon dioxide ( $\text{cm}^3$ )  
*Isipadu karbon dioksida*



- 48 Diagram 13 shows the set-up of apparatus to determine the heat of combustion for an alcohol.

34

Rajah 13 menunjukkan susunan radas bagi menentukan haba pembakaran bagi suatu alkohol

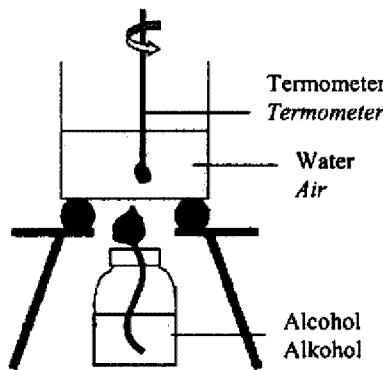


Diagram 13

Rajah 13

The heat of combustion is found to be not accurate. Which of the following procedures will help to increase the accuracy of the experiment?

Nilai haba pembakaran yang diperolehi didapati tidak tepat. Di antara yang berikut, prosedur manakah yang akan meningkatkan ketepatan eksperimen itu?

- I Stir the water constantly with thermometer  
*Sentiasa mengacau air dengan termometer*
  - II Increase the quantity of alcohol used  
*Menambahkan kuantiti alcool yang digunakan*
  - III Use the wind shield  
*Gunakan penghadang angin*
  - IV Weighing the spirit lamp immediately after heating  
*Menimbang lampu spirit serta-merta selepas pemanasan*
- A I and III only  
I and III sahaja
  - B I and IV only  
I and IV sahaja
  - C I, III and IV only  
I, III and IV sahaja
  - D II, III and IV only  
II, III and IV sahaja

- 49 Diagram 14 shows the set-up of the apparatus used to determine the heat of precipitation of lead(II) sulphate.

Rajah 14 menunjukkan susunan radas yang digunakan untuk menentukan haba pemendakan bagi plumbum(II) sulfat

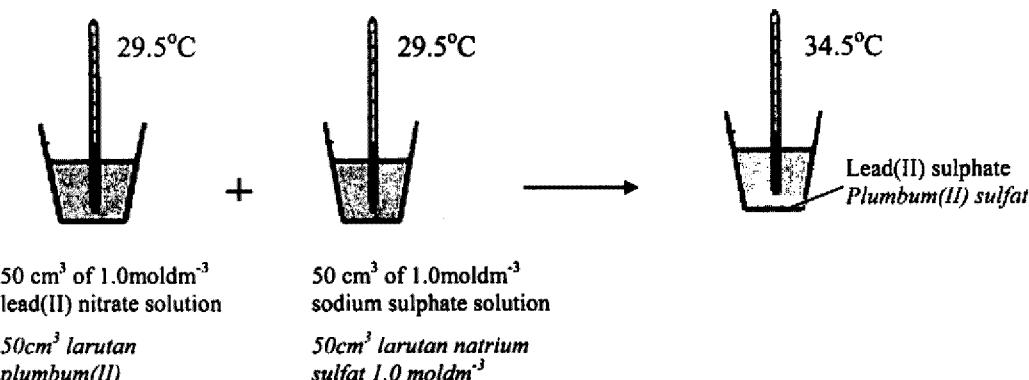


Diagram 14  
Rajah 14

What is the heat of precipitation of lead (II) sulphate?

Berapakah nilai haba pemendakan bagi plumbum(II) sulfat?

[ Specific heat capacity of water : 4.2 J g<sup>-1</sup> °C<sup>-1</sup> . Density of solution : 1 g cm<sup>-3</sup> ]  
 [ Muatan haba tentu bagi air: 4.2 J g<sup>-1</sup> °C<sup>-1</sup> Ketumpatan larutan : 1 g cm<sup>-3</sup> ]

- A -2.1 kJ mol<sup>-1</sup>
- B -4.2 kJ mol<sup>-1</sup>
- C -21 kJ mol<sup>-1</sup>
- D -42 kJ mol<sup>-1</sup>

**50** Diagram 15 shows the energy profile diagram for a reaction between P and Q.

Rajah 15 menunjukkan gambarajah profil tenaga bagi tindak balas di antara P dan Q.

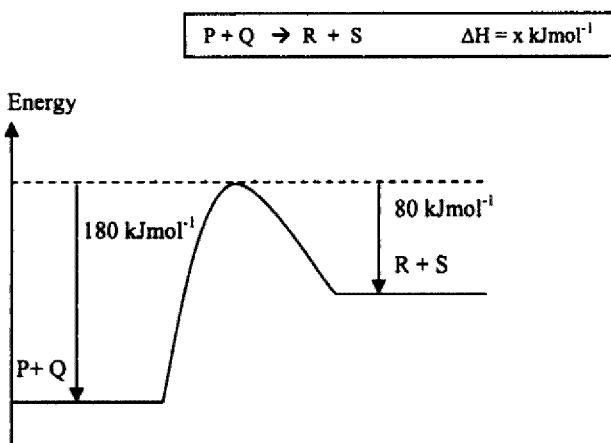


Diagram 15  
Rajah 15

What is the value of  $x$ ?

Berapakah nilai bagi  $x$ ?

- A  $-180 \text{ kJmol}^{-1}$
- B  $+80 \text{ kJmol}^{-1}$
- C  $+100 \text{ kJmol}^{-1}$
- D  $+180 \text{ kJmol}^{-1}$

**END OF QUESTION PAPER**  
**KERTAS SOALAN TAMAT**