

SULIT  
4541/1  
CHEMISTRY  
Kertas 1  
2011  
1 ¼ jam



## PEPERIKSAAN PERCUBAAN BERSAMA SIJIL PELAJARAN MALAYSIA 2011

ANJURAN  
MAJLIS PENGETUA SEKOLAH MALAYSIA (MPSM)  
CAWANGAN PERLIS

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### CHEMISTRY

### KERTAS 1

Satu jam dan lima belas minit

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**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Kertas soalan ini adalah dalam dwibahasa.*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

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Kertas soalan ini mengandungi 26 halaman bercetak

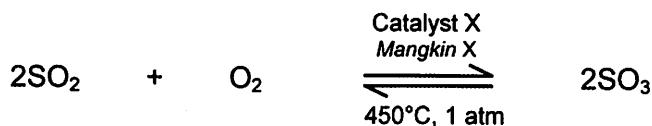
- 1 What is the meaning of melting point?  
*Apakah maksud takat lebur?*
- A The point at which a substance changes from solid to liquid at a particular pressure.  
*Takat di mana suatu bahan berubah daripada pepejal kepada cecair pada tekanan tertentu.*
- B The point at which a substance changes from liquid to solid at a particular pressure.  
*Takat di mana suatu bahan berubah daripada cecair kepada pepejal pada tekanan tertentu.*
- C The temperature at which a substance changes from solid to liquid at a particular pressure.  
*Suhu di mana suatu bahan berubah daripada pepejal kepada cecair pada tekanan tertentu.*
- D The temperature at which a substance changes from liquid to solid at a particular pressure.  
*Suhu di mana suatu bahan berubah daripada cecair kepada pepejal pada tekanan tertentu.*
- 2 Which ions will form scum with soap in hard water?  
*Ion manakah akan membentuk kekat dengan sabun dalam air liat?*
- A  $\text{Zn}^{2+}$  ion and  $\text{Mg}^{2+}$  ion  
*Ion  $\text{Zn}^{2+}$  dan ion  $\text{Mg}^{2+}$*
- B  $\text{Ca}^{2+}$  ion and  $\text{Mg}^{2+}$  ion  
*Ion  $\text{Ca}^{2+}$  dan ion  $\text{Mg}^{2+}$*
- C  $\text{Mg}^{2+}$  ion and  $\text{Na}^+$  ion  
*Ion  $\text{Mg}^{2+}$  dan ion  $\text{Na}^+$*
- D  $\text{Ca}^{2+}$  ion and  $\text{Na}^+$  ion  
*Ion  $\text{Ca}^{2+}$  dan ion  $\text{Na}^+$*
- 3 Elements in the Periodic Table of Elements are arranged according to an increase in  
*Unsur-unsur dalam Jadual Berkala Unsur disusun berdasarkan pertambahan*
- A proton number  
*nombor proton*
- B nucleon number  
*nombor nukleon*
- C relative atomic mass  
*jisim atom relatif*
- D relative molecular mass  
*jisim molekul relatif*

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- 4 The following equation shows one of the reactions involved in the Contact Process.  
*Persamaan berikut menunjukkan satu daripada tindak balas yang terlibat dalam Proses Sentuh.*



What is catalyst X?

*Apakah mangkin X?*

- A** Iron  
*Besi*
- B** Nickel  
*Nikel*
- C** Copper(II) sulphate  
*Kuprum(II) sulfat*
- D** Vanadium(V) oxide  
*Vanadium(V) oksida*
- 5 Which process has the highest rate of reaction?  
 Proses manakah mempunyai kadar tindak balas yang paling tinggi?
- A** Rusting  
*Pengaratan*
- B** Respiration  
*Respirasi*
- C** Combustion  
*Pembakaran*
- D** Photosynthesis  
*Fotosintesis*
- 6 What is the functional group of an alcohol?  
*Apakah kumpulan berfungsi bagi suatu alkohol?*
- A** – OH
- B** C = C
- C** – COO –
- D** – COOH

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- 7 Which solution has the pH value above 7?  
*Larutan manakah yang mempunyai nilai pH lebih daripada 7?*
- A Potassium hydroxide  
*Kalium hidroksida*
  - B Sodium chloride  
*Natrium klorida*
  - C Sulphuric acid  
*Asid sulfurik*
  - D Distilled water  
*Air suling*
- 8 Which salt is soluble in water?  
*Garam manakah yang larut dalam air?*
- A Silver chloride  
*Argentum klorida*
  - B Zinc carbonate  
*Zink karbonat*
  - C Copper(II) nitrat  
*Kuprum(II) nitrat*
  - D Calcium sulphate  
*Kalsium sulfat*
- 9 Which substance is a reducing agent?  
*Bahan manakah merupakan agen penurunan?*
- A Chlorine water  
*Air klorin*
  - B Sulphur dioxide  
*Sulfur dioksida*
  - C Nitric acid  
*Asid nitrik*
  - D Hydrogen peroxide  
*Hidrogen peroksida*

- 10 Diagram 2 shows the apparatus set-up to study the electrical conductivity of solution X. *Rajah 2 menunjukkan susunan radas untuk mengkaji kekonduksian elektrik larutan X.*

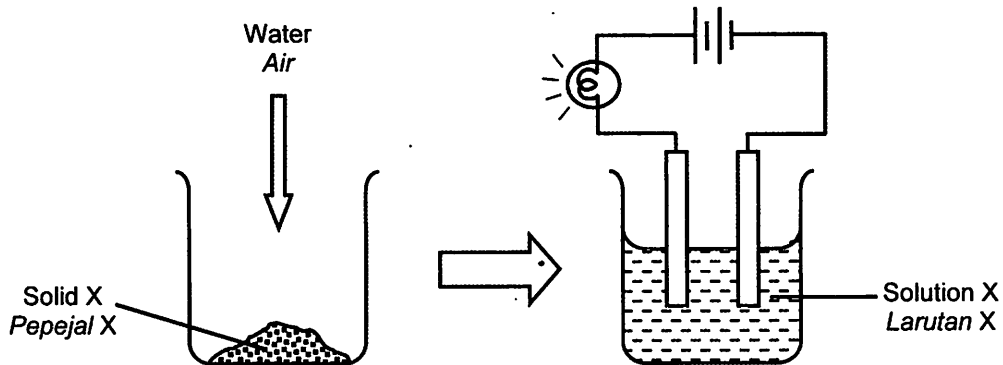
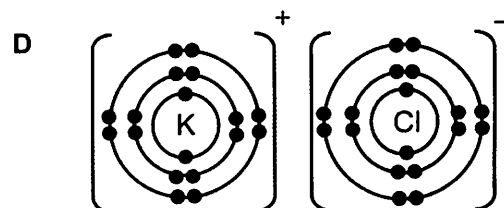
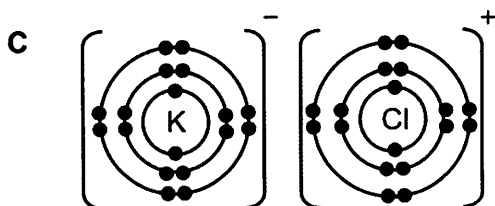
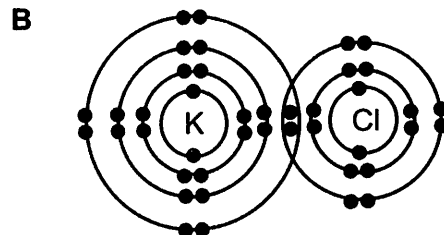
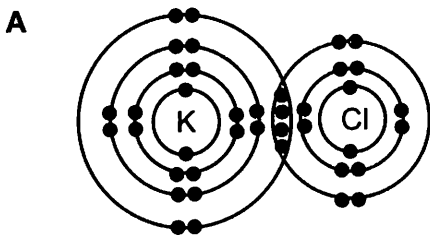


Diagram 2  
Rajah 2

What is X?  
*Apakah X?*

- A Aluminium oxide  
*Aluminium oksida*
  - B Lead(II) sulphate  
*Plumbum(II) sulfat*
  - C Potassium chloride  
*Kalium klorida*
  - D Magnesium carbonate  
*Magnesium karbonat*
- 11 Which of the following represents the electron arrangement for the compound of potassium chloride, KCl?  
[Proton number of K: 19, Cl:17]  
*Antara berikut, yang manakah mewakili susunan elektron bagi sebatian kalium klorida, KCl?*  
[Nombor proton bagi K:19,Cl:17]



[Lihat sebelah  
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- 12 The information shows two examples of medicine X.  
*Maklumat menunjukkan dua contoh ubat X.*

- Aspirin  
*Aspirin*
- Codiene  
*Kodeina*

What is medicine X?  
*Apakah ubat X?*

- A Antibiotic  
*Antibiotik*
  - B Hormone  
*Hormon*
  - C Analgesic  
*Analgesik*
  - D Psychotherapeutic medicine  
*Ubat psikoterapeutik*
- 13 The following statement shows the information about salt X.  
*Pernyataan berikut menunjukkan maklumat tentang garam X.*

One of the chemicals used in making of "plaster of paris"  
*Salah satu bahan yang digunakan dalam pembuatan "plaster of paris"*

What is X?  
*Apakah X?*

- A Barium sulphate  
*Barium sulfat*
  - B Copper(II) sulfat  
*Kuprum(II) sulfat*
  - C Calcium sulphate  
*Kalsium sulfat*
  - D Ammonium sulphate  
*Ammonium sulfat*
- 14 Which isotope is used to detect the leakage of gas pipe?  
*Isotop manakah digunakan untuk mengesan kebocoran paip gas?*
- A Carbon-14  
*Karbon-14*
  - B Iodine-131  
*Iodin-131*
  - C Cobalt-60  
*Kobalt-60*
  - D Sodium-24  
*Natrium-24*

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- 15** Substances P and Q are composed of atoms. P is less reactive than Q.

*Bahan P dan Q terdiri daripada atom. P kurang reaktif berbanding dengan Q.*

Which pair of elements is P and Q?

*Pasangan unsur manakah yang merupakan P dan Q?*

	<b>P</b>	<b>Q</b>
<b>A</b>	Bromine <i>Bromin</i>	Iodine <i>Iodin</i>
<b>B</b>	Iodine <i>Iodin</i>	Bromine <i>Bromin</i>
<b>C</b>	Sodium <i>Natrium</i>	Potassium <i>Kalium</i>
<b>D</b>	Potassium <i>Kalium</i>	Sodium <i>Natrium</i>

- 16** Which of the following acids is a strong acid?

*Antara asid berikut, yang manakah merupakan asid kuat?*

- A** Ethanoic acid  
*Asid etanoik*
- B** Methanoic acid  
*Asid metanoik*
- C** Phosphoric acid  
*Asid fosforik*
- D** Hydrochloric acid  
*Asid hidroklorik*

- 17** How many times are one atom of bromine heavier than one atom of calcium?

[Relative atomic mass: Ca = 40; Br = 80]

*Berapa kalikah satu atom bromin lebih berat daripada satu atom kalsium?*

[Jisim atom relatif: Ca = 40; Br = 80]

- A** 0.25
- B** 0.50
- C** 2.00
- D** 4.00

- 18 Which pair is true about physical properties of sodium oxide?  
Pasangan manakah yang benar tentang sifat fizik natrium oksida?

	<b>Solubility in water</b> <i>Kelarutan dalam air</i>	<b>Electrical conductivity in molten state</b> <i>Kekonduksian elektrik dalam keadaan lebur</i>
<b>A</b>	Soluble <i>Larut</i>	Can conduct electricity <i>Boleh mengkonduksikan elektrik</i>
<b>B</b>	Soluble <i>Larut</i>	Cannot conduct electricity <i>Tidak boleh mengkonduksikan elektrik</i>
<b>C</b>	Insoluble <i>Tidak larut</i>	Cannot conduct electricity <i>Tidak boleh mengkonduksikan elektrik</i>
<b>D</b>	Insoluble <i>Tidak larut</i>	Can conduct electricity <i>Boleh mengkonduksikan elektrik</i>

- 19 Diagram 3 shows an energy profile.  
Rajah 3 menunjukkan satu profil tenaga.

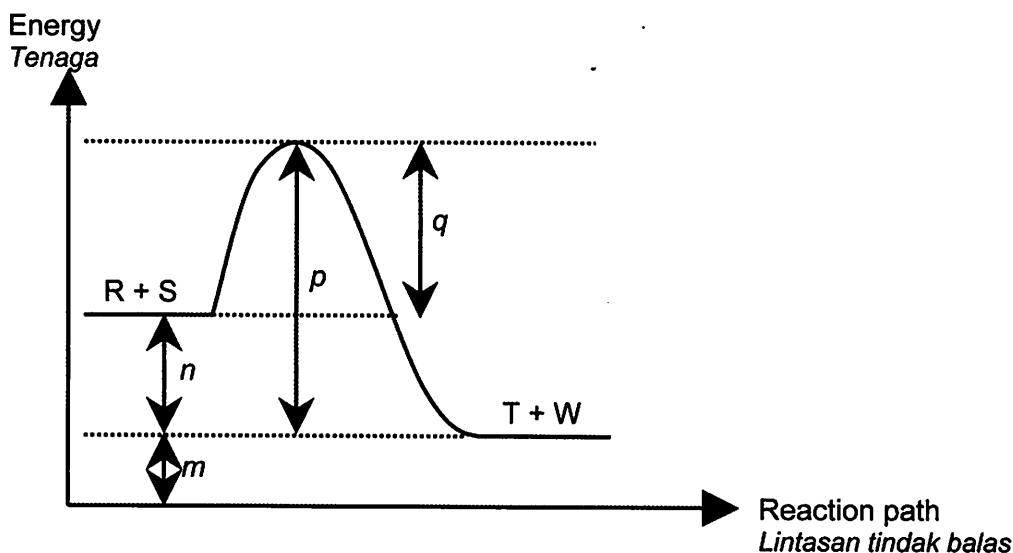


Diagram 3  
Rajah 3

Which of the following represents the activation energy for this reaction?  
Antara berikut yang manakah mewakili tenaga pengaktifan bagi tindak balas ini?

- A *m*
- B *n*
- C *p*
- D *q*



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20 Diagram 4 shows a musical instrument.

Rajah 4 menunjukkan sejenis alat muzik.



Diagram 4  
Rajah 4

Which alloy is used to make this instrument?

Aloi manakah yang digunakan untuk membuat alat ini?

- A Brass  
Loyang
- B Pewter  
Piuter
- C Bronze  
Gangsa
- D Duralumin  
Duralumin

21 Diagram 5 shows an incomplete Periodic Table of Elements. P, Q, R and S are not the actual symbols of the elements.

Rajah 5 menunjukkan sebahagian daripada Jadual Berkala Unsur. P, Q, R dan S bukan simbol sebenar bagi unsur-unsur.

		P																				S
								R														
		Q																				

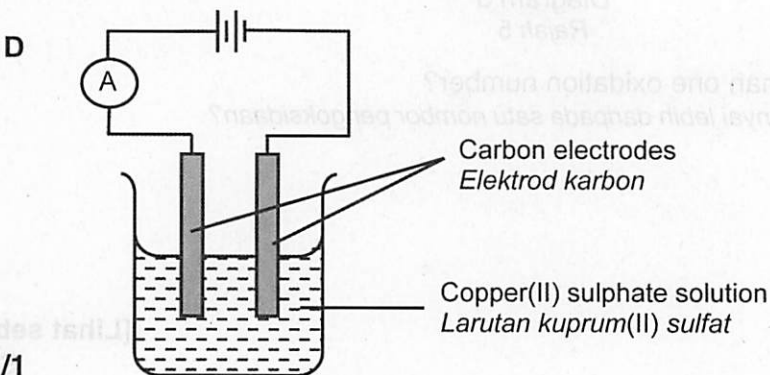
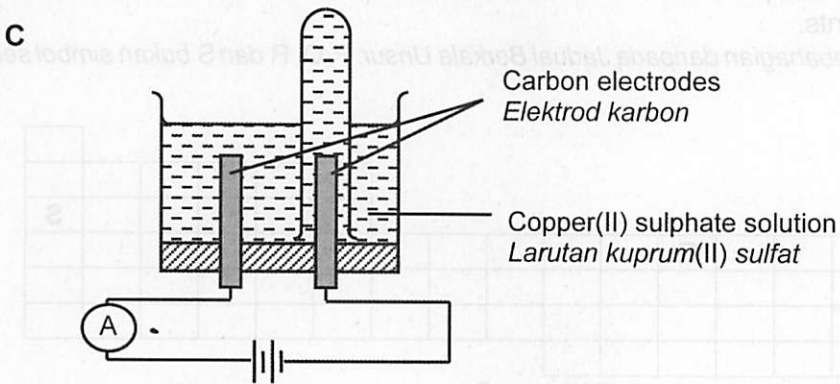
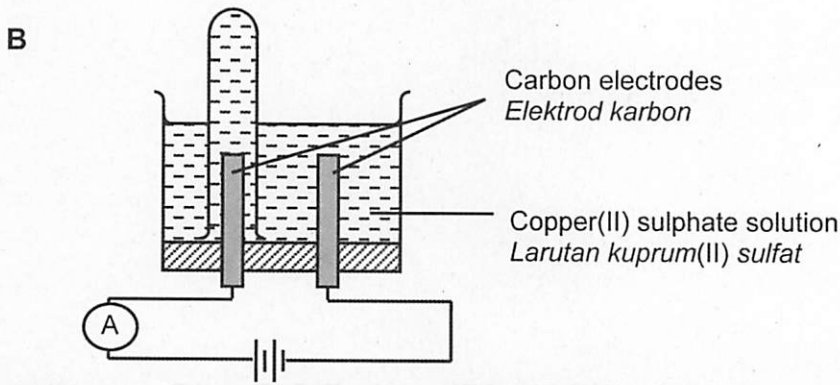
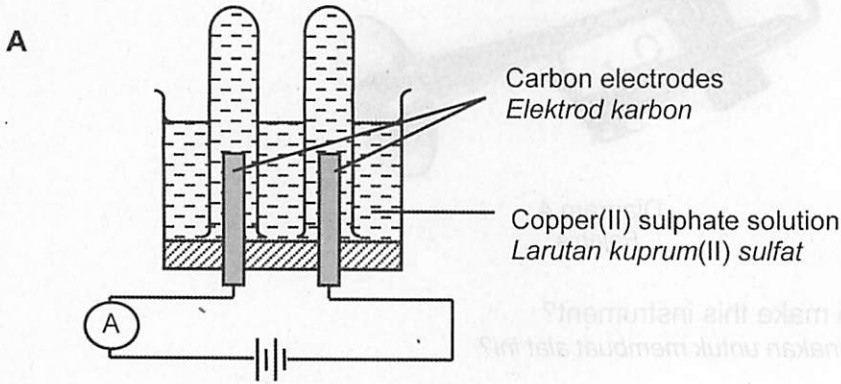
Diagram 5  
Rajah 5

Which element has more than one oxidation number?

Unsur manakah yang mempunyai lebih daripada satu nombor pengoksidaan?

- A P
- B Q
- C R
- D S

22 Which is the **most suitable** apparatus set-up to electrolyse copper(II) sulphate solution by using carbon electrodes?  
Susunan radas manakah **paling sesuai** untuk mengelektrolisiskan larutan kuprum(II) sulfat dengan menggunakan elektrod-elektrod karbon ?



23 Diagram 6 shows the apparatus set-up for the electrolysis of potassium iodide solution using carbon electrodes.

Rajah 6 menunjukkan susunan radas bagi proses elektrolisis larutan kalium iodida dengan menggunakan elektrod karbon.

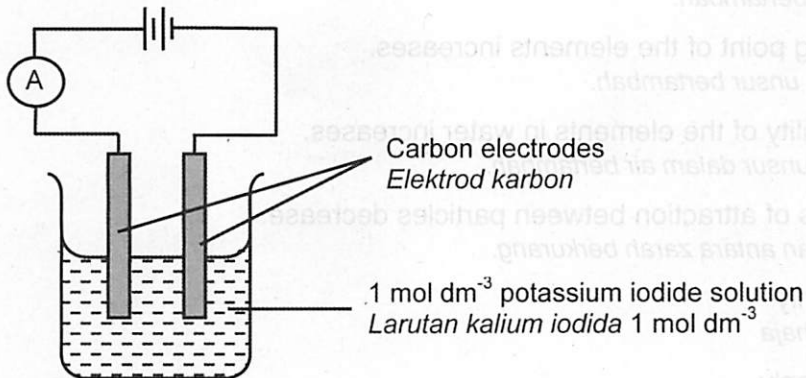


Diagram 6  
Rajah 6

What are the products at the anode and cathode?

Apakah hasil di anod dan katod?

	<b>Anode</b> <i>Anod</i>	<b>Cathode</b> <i>Katod</i>
A	Iodine <i>Iodin</i>	Potassium <i>Kalium</i>
B	Iodine <i>Iodin</i>	Hydrogen <i>Hidrogen</i>
C	Oxygen <i>Oksigen</i>	Potassium <i>Kalium</i>
D	Oxygen <i>Oksigen</i>	Hydrogen <i>Hidrogen</i>

24 What is the function of azo and triphenyl compounds in food?

Apakah fungsi sebatian azo dan trifenil dalam makanan?

- A To emulsify the oil in water  
*Untuk mengemulsikan minyak dalam air*
- B To make a food more attractive  
*Untuk menjadikan makanan lebih menarik*
- C To prevent the food from being oxidised  
*Untuk mengelakkan makanan daripada teroksida*
- D To increase the taste and flavour of food  
*Untuk meningkatkan rasa dan perisa makanan*

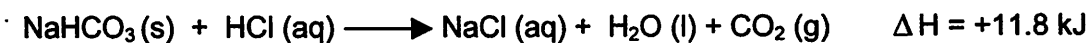
25 When going down Group 18 of the Periodic Table of Elements,  
*Apabila menuruni Kumpulan 18 dalam Jadual Berkala Unsur,*

- I the size of the atom increases.  
*saiz atom bertambah.*
  - II the boiling point of the elements increases.  
*takat didih unsur bertambah.*
  - III the solubility of the elements in water increases.  
*kelarutan unsur dalam air bertambah.*
  - IV the forces of attraction between particles decrease.  
*daya tarikan antara zarah berkurang.*
- A I and II only  
*I dan II sahaja*
  - B II and III only  
*II dan III sahaja*
  - C III and IV only  
*III dan IV sahaja*
  - D I, II and III only  
*I, II dan III sahaja*

26 Which of the following pairs of reactants resulted in neutralization process?  
*Antara pasangan bahan tindak balas berikut, yang manakah menghasilkan proses peneutralan?*

- I Nitric acid + ammonia solution  
*Asid nitrik + larutan ammonia*
  - II Carbonic acid + calcium carbonate  
*Asid karbonik + kalsium karbonat*
  - III Sulphuric acid + potassium hydroxide  
*Asid sulfurik + kalium hidroksida*
  - IV Hydrochloric acid + magnesium hydroxide  
*Asid hidroklorik + magnesium hidroksida*
- A I and II only  
*I dan II sahaja*
  - B I and IV only  
*I dan IV sahaja*
  - C I, II and III only  
*I, II dan III sahaja*
  - D I, III and IV only  
*I, III dan IV sahaja*

- 27 The following thermochemical equation shows the reaction between sodium hydrogen carbonate and hydrochloric acid.  
*Persamaan termokimia berikut menunjukkan tindak balas antara natrium hidrogen karbonat dan asid hidroklorik.*



Which of the following is true about the reaction?  
*Antara berikut yang manakah benar tentang tindak balas itu?*

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

- 28 Diagram 7 shows the information of atom Y.  
*Rajah 7 menunjukkan maklumat atom Y.*

Number of electrons <i>Bilangan elektron</i>	19
Number of neutrons <i>Bilangan neutron</i>	20

Diagram 7  
*Rajah 7*

Which symbol is correct for atom Y?  
*Simbol manakah yang betul bagi atom Y?*

- A**    20    Y  
       19
- B**    39    Y  
       19
- C**    19    Y  
       39
- D**    39    Y  
       20

- 29 The following equation represents the reaction between oxide of X and carbon.  
*Persamaan berikut mewakili tindak balas antara oksida X dengan karbon.*



Which statement is correct?

*Pernyataan manakah yang benar?*

- A Carbon is oxidised  
*Karbon dioksidakan*
  - B XO is a reducing agent  
*XO adalah agen penurunan*
  - C The oxidation number of X in XO is +1  
*Nombor pengoksidaan X dalam XO adalah +1*
  - D X is placed higher than carbon in the reactivity series of metal  
*X berada di atas karbon dalam siri kereaktifan logam*
- 30 The formula for chloride ion is  $Cl^-$  and the formula of carbonate ion is  $CO_3^{2-}$ .  
*Formula bagi ion klorida adalah  $Cl^-$  dan formula bagi ion karbonat adalah  $CO_3^{2-}$ .*

If the formula of chloride of T is TCl, what is the formula of carbonate of T?

*Jika formula bagi klorida T ialah TCl, apakah formula bagi karbonat T?*

- A  $TCO_3$
  - B  $T_2CO_3$
  - C  $T(CO_3)_2$
  - D  $T_3CO_3$
- 31 Diagram 8 shows the electron arrangement for nitrogen molecule,  $N_2$ .  
*Rajah 8 menunjukkan susunan elektron bagi molekul nitrogen,  $N_2$ .*

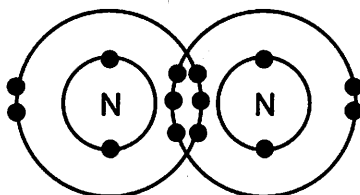


Diagram 8  
*Rajah 8*

What is the position of nitrogen atom in the Periodic Table of Elements?

*Apakah kedudukan atom nitrogen dalam Jadual Berkala Unsur?*

	Group <i>Kumpulan</i>	Period <i>Kala</i>
A	5	2
B	8	2
C	15	2
D	18	2

- 32 Diagram 9 shows two tests carried out on solution Y.  
*Rajah 9 menunjukkan dua ujian yang telah dijalankan ke atas larutan Y.*

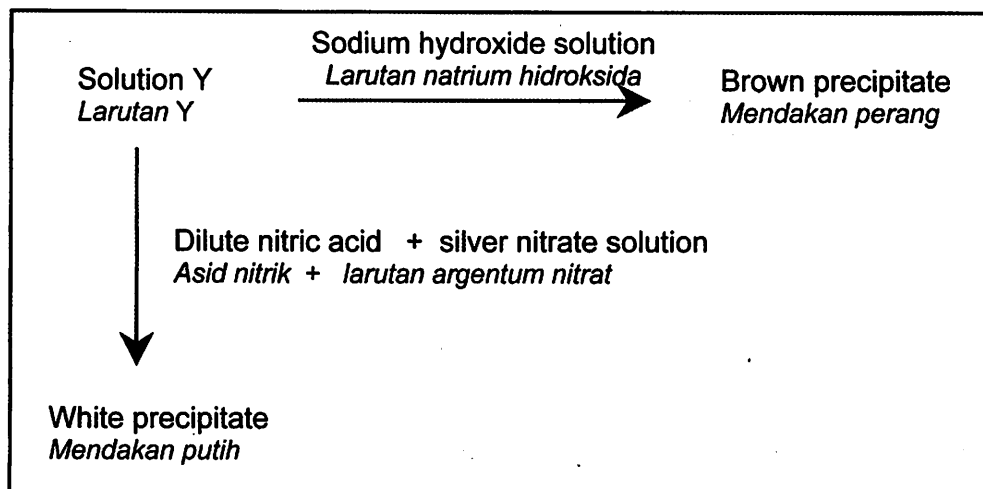


Diagram 9  
*Rajah 9*

Which is most likely to be solution Y?  
*Yang manakah mungkin larutan Y?*

- A Iron(III) chloride  
*Ferum(III) klorida*
- B Iron(II) sulphate  
*Ferum(II) sulfat*
- C Lead(II) chloride  
*Plumbum(II) klorida*
- D Copper(II) sulphate  
*Kuprum(II) sulfat*

- 33 Diagram 10 is an energy level diagram.  
Rajah 10 ialah gambar rajah aras tenaga.

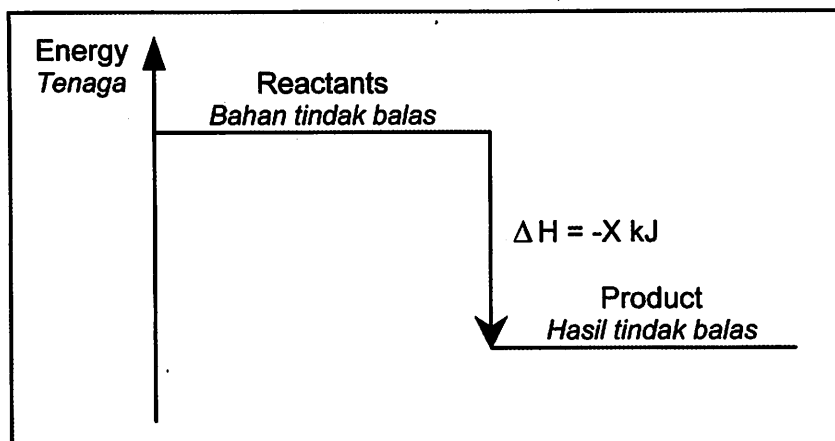


Diagram 10  
Rajah 10

Which of the following can be deduced from Diagram 10 ?  
Antara berikut, yang manakah boleh disimpulkan daripada Rajah 10 ?

- A X kJ of energy is absorbed  
*X kJ tenaga diserap*
- B Endothermic reaction occurred  
*Tindak balas endotermik berlaku*
- C The temperature at the end of the reaction is higher than the initial temperature  
*Suhu pada akhir tindak balas adalah lebih tinggi daripada suhu awal tindak balas*
- D The energy content of the product is higher than the energy content of the reactants  
*Kandungan tenaga hasil tindak balas adalah lebih tinggi daripada kandungan tenaga bahan tindak balas*
- 34 The following equation represents a redox reaction.  
Persamaan berikut mewakili satu tindak balas redoks.



Which of the following change in oxidation number is correct for Cu?  
Antara berikut, perubahan nombor pengoksidaan yang manakah betul bagi Cu?

- A  $0 \longrightarrow +1$
- B  $0 \longrightarrow +2$
- C  $+1 \longrightarrow 0$
- D  $+2 \longrightarrow 0$



35 Diagram 11 shows the apparatus set-up for the production of compound Y.  
*Rajah 11 menunjukkan susunan radas untuk penghasilan sebatian Y.*

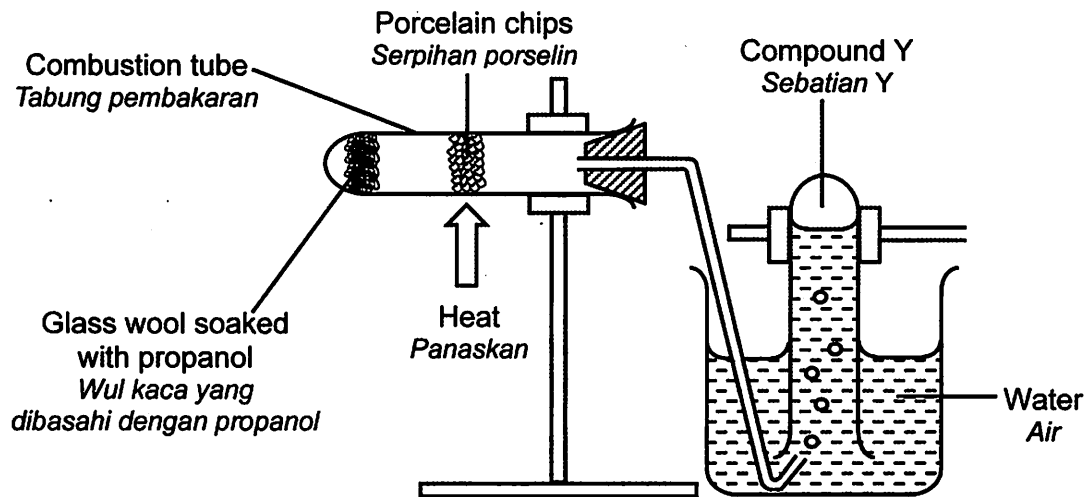


Diagram 11  
*Rajah 11*

What is compound Y?  
*Apakah sebatian Y?*

- A Propane  
*Propana*
- B Propene  
*Propena*
- C Chloropropane  
*Kloropropana*
- D Propanoic acid  
*Asid propanoik*

36 Diagram 12 shows the structural formula of an unsaturated hydrocarbon Q.  
*Rajah 12 menunjukkan formula struktur bagi suatu hidrokarbon tak tepu Q.*

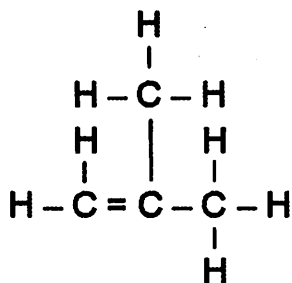
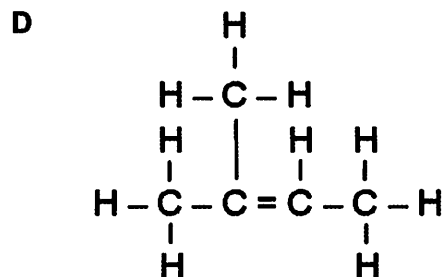
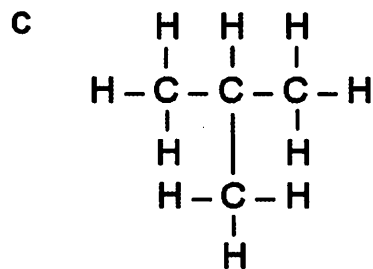
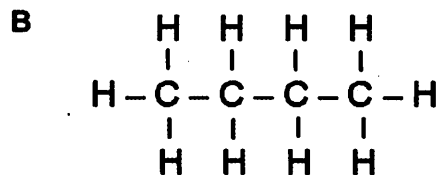
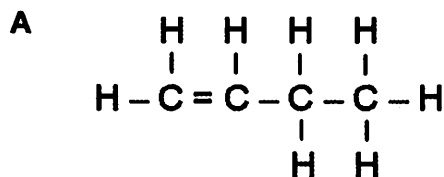


Diagram 12  
*Rajah 12*

Which of the following is the isomer of hydrocarbon Q?  
*Antara berikut, yang manakah merupakan isomer bagi hidrokarbon Q?*

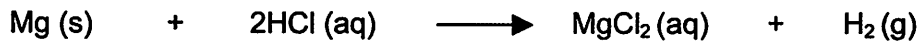


- 37 Why borosilicate glass is suitable to be used as a cookware compared to lead glass?  
*Mengapakah kaca borosilikat sesuai digunakan sebagai alat memasak berbanding dengan kaca plumbum?*
- A Borosilicate glass is harder than lead glass  
*Kaca borosilikat lebih keras berbanding dengan kaca plumbum*
- B Lead glass is more transparent than borosilicate glass  
*Kaca plumbum lebih lutsinar berbanding dengan kaca borosilikat*
- C Borosilicate glass is more resistant to heat than lead glass  
*Kaca borosilikat lebih tahan haba berbanding dengan kaca plumbum*
- D Lead glass is more resistant to chemical substances than borosilicate glass  
*Kaca plumbum lebih tahan terhadap bahan kimia berbanding dengan kaca borosilikat.*
- 38 An athlete is having muscle cramp. A doctor treats him with a cool pack.  
*Seorang atlit mengalami kekejangan otot. Doktor merawatnya dengan pek sejuk.*

What is the chemical used in the cool pack?

*Apakah bahan kimia yang digunakan dalam pek sejuk?*

- A Sodium acetate  
*Natrium asetat*
- B Calcium chloride  
*Kalsium klorida*
- C Ammonium nitrate  
*Ammonium nitrat*
- D Magnesium sulphate  
*Magnesium sulfat*
- 39 The equation shows the reaction between magnesium and hydrochloric acid.  
*Persamaan di bawah menunjukkan tindak balas antara magnesium dan asid hidroklorik.*



Which statement is correct?

[Relative atomic mass: H = 1; Mg = 24; Cl = 35.5]

*Pernyataan manakah yang betul?*

*[Jisim atom relatif: H = 1; Mg = 24; Cl = 35.5]*

- A 1 g of magnesium reacts with 2 g of hydrochloric acid to produce 1 g of magnesium chloride and 1 g of hydrogen gas.  
*1 g magnesium bertindak balas dengan 2 g asid hidroklorik untuk menghasilkan 1 g magnesium klorida dan 1 g gas hidrogen.*
- B 24 g of magnesium reacts with 36.5 g of hydrochloric acid to produce 95 g of magnesium chloride and 2 g of hydrogen gas.  
*24 g magnesium bertindak balas dengan 36.5 g asid hidroklorik untuk menghasilkan 95 g magnesium klorida dan 2 g gas hidrogen.*
- C 1 mol of magnesium reacts with 2 mol of hydrochloric acid to produce 1 mol of magnesium chloride and 1 mol of hydrogen gas.  
*1 mol magnesium bertindak balas dengan 2 mol asid hidroklorik untuk menghasilkan 1 mol magnesium klorida dan 1 mol gas hidrogen.*
- D 1 magnesium atom reacts with 2 hydrochloric acid molecules to produce 1 magnesium chloride molecule and 1 molecule of hydrogen gas.  
*1 atom magnesium bertindak balas dengan 2 molekul asid hidroklorik untuk menghasilkan 1 molekul magnesium klorida dan 1 molekul gas hidrogen.*

40 Table 1 shows an experiment to study the rate of reaction between zinc and hydrochloric acid to produce hydrogen gas.

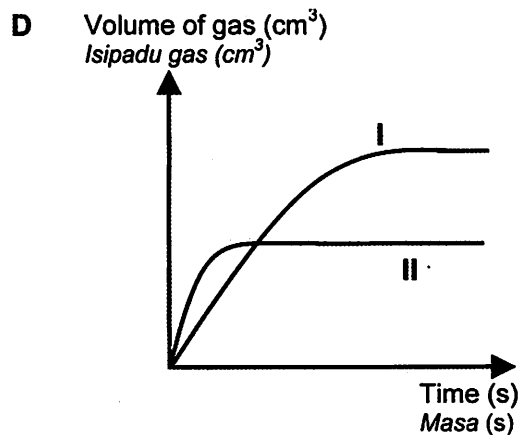
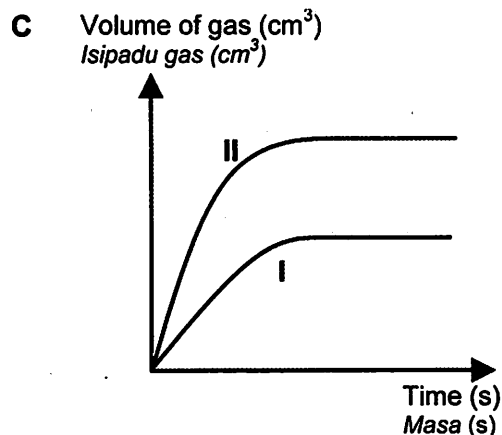
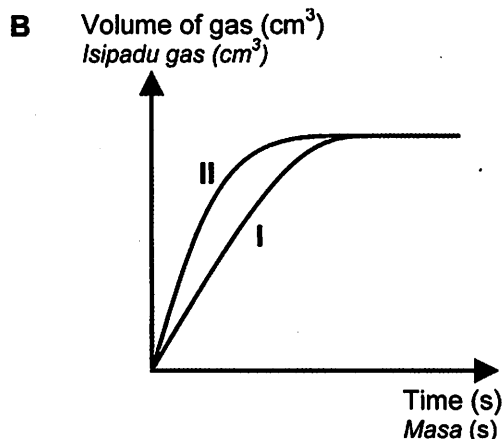
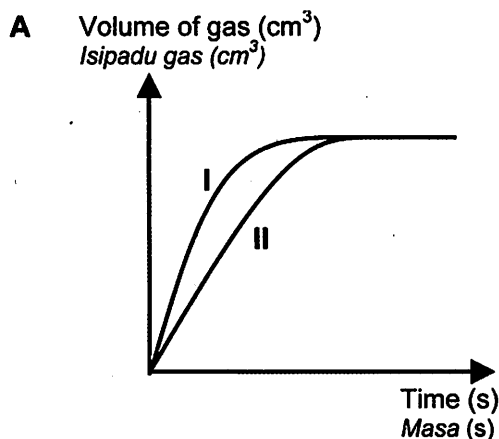
Jadual 1 menunjukkan satu eksperimen untuk mengkaji kadar tindak balas antara zink dengan asid hidroklorik untuk membebaskan gas hidrogen.

Experiment Eksperimen	Substances Bahan
I	Excess zinc granules and 100.0 cm <sup>3</sup> of 1 mol dm <sup>-3</sup> hydrochloric acid. <i>Ketulan zink berlebihan dengan 100.0 cm<sup>3</sup> asid hidroklorik 1 mol dm<sup>-3</sup>.</i>
II	Excess zinc powder and 50.0 cm <sup>3</sup> of 1 mol dm <sup>-3</sup> hydrochloric acid. <i>Serbuk zink berlebihan dengan 50.0 cm<sup>3</sup> asid hidroklorik 1 mol dm<sup>-3</sup>.</i>

Table 1  
Jadual 1

Which graph represents the results for the two experiments?

Graf manakah mewakili keputusan bagi kedua-dua eksperimen itu?



- 41 The equation below shows the decomposition of magnesium nitrate when heated.  
*Persamaan kimia berikut menunjukkan penguraian magnesium nitrat apabila dipanaskan.*



What is the volume of nitrogen dioxide gas formed when 14.8 g of magnesium nitrate is heated at room condition?

[Relative atomic mass: N = 14; O = 16; Mg = 24; 1 mole of any gas occupied 24 dm<sup>3</sup> at room conditions]

*Berapakah isipadu gas nitrogen dioksida terbentuk apabila 14.8 g magnesium nitrat dipanaskan pada suhu bilik?*

*[Jisim atom relatif: N = 14; O = 16; Mg = 24; 1 mol sebarang gas menempati 24 dm<sup>3</sup> pada suhu bilik]*

- A 1.2 dm<sup>3</sup>  
 B 2.4 dm<sup>3</sup>  
 C 4.8 dm<sup>3</sup>  
 D 9.6 dm<sup>3</sup>
- 42 When copper(II) carbonate is heated, it decomposes to produce copper(II) oxide and carbon dioxide gas.  
*Apabila kuprum(II) karbonat dipanaskan, ia terurai untuk menghasilkan kuprum(II) oksida dan gas karbon dioksida.*

What is the mass of copper(II) carbonate needed to produce 4.0 g of copper(II) oxide?

[Relative atomic mass: C = 12; O = 16; Cu = 64]

*Berapakah jisim kuprum(II) karbonat yang diperlukan untuk menghasilkan 4.0 g kuprum(II) oksida?*

*[Jisim atom relatif : C = 12; O = 16; Cu = 64]*

- A 3.72 g  
 B 6.20 g  
 C 9.92 g  
 D 11.16 g

- 43 Table 2 shows the total volume of gas collected at regular intervals in a reaction between calcium carbonate and hydrochloric acid.

*Jadual 2 menunjukkan jumlah isi padu gas yang terkumpul pada sela masa tertentu dalam suatu tindak balas antara kalsium karbonat dengan asid hidroklorik.*

Time (s) Masa (s)	0	30	60	90	120	150	180	210
Volume of carbon dioxide gas (cm <sup>3</sup> ) <i>Isi padu gas karbon dioksida (cm<sup>3</sup>)</i>	0.00	14.00	26.50	34.00	39.00	43.00	43.00	43.00

Table 2  
Jadual 2

Which of the following is the average rate of reaction in second minute?

*Antara berikut, yang manakah kadar tindak balas purata dalam minit kedua?*

- A 0.167 cm<sup>3</sup> s<sup>-1</sup>  
 B 0.208 cm<sup>3</sup> s<sup>-1</sup>  
 C 0.325 cm<sup>3</sup> s<sup>-1</sup>  
 D 0.442 cm<sup>3</sup> s<sup>-1</sup>
- 44 Compound N has the following properties:  
*Sebatian N mempunyai sifat-sifat berikut:*
- Immiscible with water  
*Tidak terlarutcampur dengan air*
  - Less dense than water  
*Kurang tumpat daripada air*
  - Propanol is one of the reactants in the production of compound N  
*Propanol ialah salah satu bahan tindak balas dalam penghasilan sebatian N*

What is compound N?

*Apakah sebatian N?*

- A Propene  
*Propena*  
 B Propanoic acid  
*Asid propanoik*  
 C 2-methylpropene  
*2-metilpropena*  
 D Ethyl propanoate  
*Etil propanoat*

**SULIT****23****4541/1**

- 45 A plumber wants to replace a rusted water pipe with a water pipe made from polymer X.  
*Seorang tukang paip ingin menggantikan paip air yang berkarat dengan paip air yang diperbuat daripada polimer X.*

What is polymer X?

*Apakah polimer X?*

- A Perspex  
*Perspek*
- B Polythene  
*Politena*
- C Polystyrene  
*Polistirena*
- D Polyvinyl chloride  
*Polivinil klorida*

- 46 Which of the following shows the correct oxidation number of sulphur?  
*Antara berikut, yang manakah menunjukkan nombor pengoksidaan yang betul bagi sulfur?*

	$\text{SO}_4^{2-}$	$\text{S}_2\text{O}_3^{2-}$
A	+2	+4
B	+2	+6
C	+6	+2
D	+6	+4

- 47 Table 3 shows the negative terminal and potential difference of different pairs of metals.  
*Jadual 3 menunjukkan terminal negatif dan beza keupayaan bagi pasangan logam yang berlainan.*

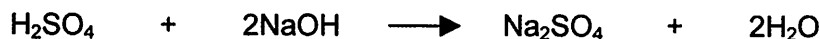
Pair of metal <i>Pasangan logam</i>	Potential difference (V) <i>Beza keupayaan (V)</i>	Negative terminal <i>Terminal negatif</i>
P and Q <i>P dan Q</i>	0.7	Q
P and R <i>P dan R</i>	1.3	R
Q and S <i>Q dan S</i>	1.0	Q

Table 3  
*Jadual 3*

Which of the following is the correct ascending order of P, Q, R and S in the electrochemical series?

*Antara berikut yang manakah susunan secara menaik yang betul bagi P, Q, R dan S dalam siri elektrokimia?*

- A P, S, Q, R  
 B R, Q, P, S  
 C R, Q, S, P  
 D S, P, Q, R
- 48 The chemical equation shows the reaction between sulphuric acid and sodium hydroxide solution.  
*Persamaan kimia menunjukkan tindak balas antara asid sulfurik dan larutan natrium hidroksida.*



What is the volume of 1.0 mol dm<sup>-3</sup> sodium hydroxide solution which can neutralise 25.0 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> sulphuric acid?

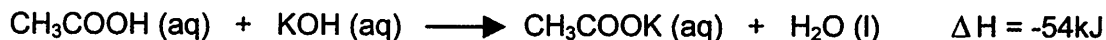
*Berapakah isi padu larutan natrium hidroksida 1.0 mol dm<sup>-3</sup> yang boleh meneutralkan 25.0 cm<sup>3</sup> asid sulfurik 1.0 mol dm<sup>-3</sup>?*

- A 12.5 cm<sup>3</sup>  
 B 25.0 cm<sup>3</sup>  
 C 50.0 cm<sup>3</sup>  
 D 70.0 cm<sup>3</sup>



- 49 The thermochemical equation shows the reaction between potassium hydroxide solution and ethanoic acid.

*Persamaan termokimia berikut menunjukkan tindak balas antara larutan kalium hidroksida dan asid etanoik.*



Calculate the temperature change when 50 cm<sup>3</sup> of 2 mol dm<sup>-3</sup> ethanoic acid reacts with 50 cm<sup>3</sup> of 2 mol dm<sup>-3</sup> potassium hydroxide solution?

[Specific heat capacity of solution = 4.2 J g<sup>-1</sup> °C<sup>-1</sup>; Density of solution = 1 g cm<sup>-3</sup>]

*Hitungkan perubahan suhu apabila 50 cm<sup>3</sup> asid etanoik 2 mol dm<sup>-3</sup> bertindak balas dengan 50 cm<sup>3</sup> larutan kalium hidroksida 2 mol dm<sup>-3</sup>?*

*[Muatan haba tentu larutan = 4.2 J g<sup>-1</sup> °C<sup>-1</sup>; Ketumpatan larutan = 1 g cm<sup>-3</sup>]*

- A 2.7 °C
- B 5.4 °C
- C 12.9 °C
- D 25.7 °C

- 50 A doctor treats a patient who is sad and depressed.

*Seorang doktor merawat seorang pesakit yang sedih dan murung.*

Which medicine is suitable to treat the patient?

*Ubat manakah yang sesuai untuk merawat pesakit tersebut?*

- A Paracetamol  
*Parasetamol*
- B Barbiturate  
*Barbiturat*
- C Penicilin  
*Penisilin*
- D Codeine  
*Kodeina*

**END OF QUESTION PAPER  
KERTAS SOALAN TAMAT**

**[Lihat sebelah  
SULIT**

**INFORMATION FOR CANDIDATES**  
**MAKLUMAT UNTUK CALON**

1. This question paper consists of **50** questions.  
*Kertas soalan ini mengandungi 50 soalan.*
2. Answer **all** questions.  
*Jawab **semua** soalan.*
3. Each question is followed by four alternative answers, **A, B, C** or **D**. For each question, choose **one** answer only. Blacken your answer on the objective answer sheet provided.  
*Tiap-tiap soalan diikuti oleh empat pilihan jawapan, iaitu **A, B, C** dan **D**. Bagi setiap soalan, pilih **satu** jawapan sahaja. Hitamkan jawapan anda pada kertas jawapan objektif yang disediakan.*
4. If you wish to change your answer, erase the blackened mark that you have made. Then blacken the new answer.  
*Jika anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.*
5. The diagrams in the questions provided are not drawn to scale unless stated.  
*Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.*
6. You may use a non-programmable scientific calculator.  
*Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*