

SULIT



LEMBAGA PEPERIKSAAN
KEMENTERIAN PELAJARAN MALAYSIA

SIJIL PELAJARAN MALAYSIA 2013

4541/1

CHEMISTRY

Kertas 1

Nov./Dis.

$1\frac{1}{4}$ jam

Satu jam lima belas minit

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.*

Kertas soalan ini mengandungi 34 halaman bercetak dan 2 halaman tidak bercetak.

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- 1 A patient is diagnosed of having cancer.
Which isotope is used to treat the patient?
*Seorang pesakit didiagnosiskan mempunyai kanser.
Isotop manakah yang digunakan untuk merawat pesakit itu?*
- A Carbon-14
Karbon-14
- B Sodium-24
Natrium-24
- C Phosphorus-32
Fosforus-32
- D Cobalt-60
Kobalt-60
- 2 What is the meaning of reduction?
Apakah maksud penurunan?
- A Gain of electron
Terima elektron
- B Gain of oxygen
Terima oksigen
- C Loss of hydrogen
Hilang hidrogen
- D Increase in oxidation number
Penambahan nombor pengoksidaan
- 3 Alloy of copper is harder than pure copper.
Which statement is correct about the alloy?
*Aloi bagi kuprum adalah lebih keras daripada kuprum tulen.
Pernyataan manakah yang betul mengenai aloi itu?*
- A Atoms are orderly arranged
Atom tersusun dengan teratur
- B Spaces between atoms decrease
Ruang kosong antara atom berkurang
- C Attractive forces between copper atoms decrease
Daya tarikan antara atom kuprum berkurang
- D Layers of copper atoms are more difficult to slide
Lapisan atom kuprum lebih sukar menggelongsor

4 Diagram 1 shows an example of food packaging.

Rajah 1 menunjukkan suatu contoh pembungkus makanan.

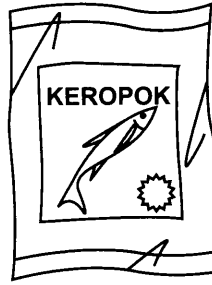


Diagram 1
Rajah 1

Which of the following explains why the plastic packaging pollutes the environment?

Antara yang berikut, yang manakah menerangkan mengapa plastik pembungkus itu mencemarkan alam sekitar?

- I Not easily biodegradable
Tidak terbiodegradasi dengan mudah
 - II Releases poisonous gases
Membebaskan gas beracun
 - III Causes the formation of algae
Menyebabkan pembentukan alga
 - IV Causes blockage of drainage system and flash flood
Menyebabkan sistem perparitan tersumbat dan banjir kilat
- A** I and II only
I dan II sahaja
- B** II and III only
II dan III sahaja
- C** I, II and IV only
I, II dan IV sahaja
- D** I, III and IV only
I, III dan IV sahaja

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5 Metals are extracted from their ores.

What is the name of the ores that contain Fe_2O_3 as the main mineral?

Logam diekstrakkan daripada bijih.

Apakah nama bijih yang mengandungi Fe_2O_3 sebagai mineral utama?

A Cassiterite

Kasiterit

B Hematite

Hematit

C Magnetite

Magnetit

D Malachite

Malakit

6 What is the function of penicillin?

Apakah fungsi penisilin?

A Treats anxiety

Merawat kebimbangan

B Relieves pain

Melegakan kesakitan

C Retards the growth of bacteria

Merencatkan pertumbuhan bakteria

D Controls the level of sugar in the blood

Mengawal tahap gula dalam darah

7 Which cation forms scum with soap?

Kation manakah yang membentuk kekat dengan sabun?

A Na^+

B Mg^{2+}

C Al^{3+}

D NH_4^+

8 Diagram 2 shows the formation of acid rain in an industrial area.

Rajah 2 menunjukkan pembentukan hujan asid di kawasan perindustrian.

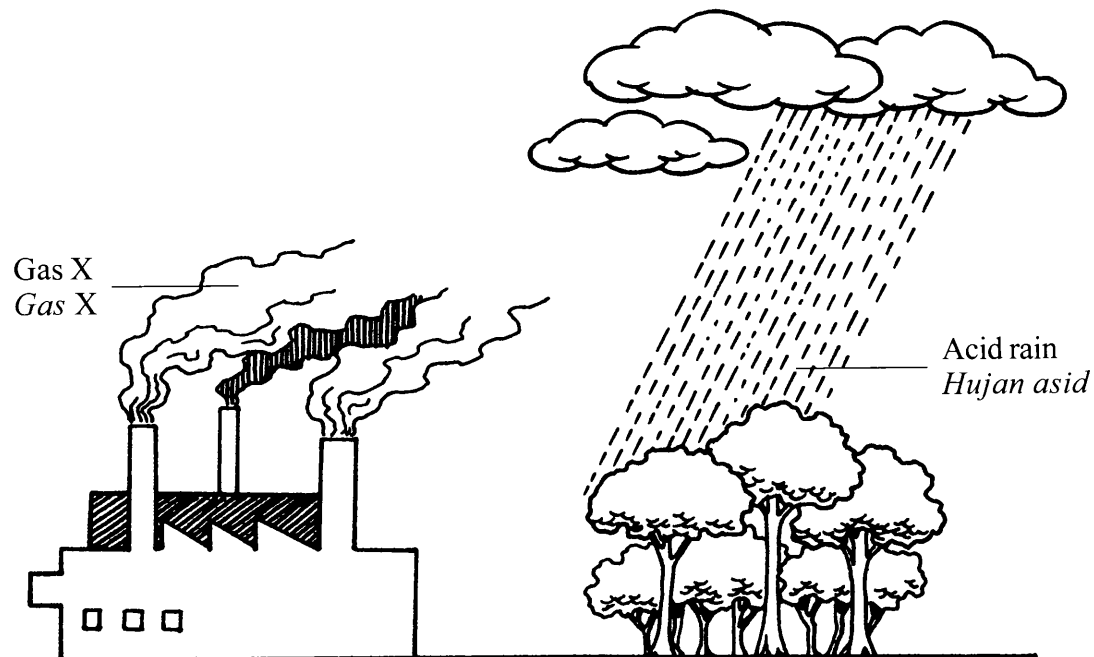


Diagram 2
Rajah 2

What is gas X?

Apakah gas X?

A Nitrogen

Nitrogen

B Ammonia

Ammonia

C Sulphur dioxide

Sulfur dioksida

D Hydrogen chloride

Hidrogen klorida

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9 Y is located in the same group as argon in the Periodic Table of Elements.

Which of the following are the characteristics of Y?

Y terletak dalam kumpulan yang sama dengan argon dalam Jadual Berkala Unsur.

Antara yang berikut, yang manakah ciri-ciri bagi Y?

I A monoatomic particle

Zarah monoatom

II Chemically inert

Lengai secara kimia

III Liquid at room temperature

Cecair pada suhu bilik

IV Conduct electricity

Mengkonduksi elektrik

A I and II

I dan II

B I and III

I dan III

C II and IV

II dan IV

D III and IV

III dan IV

10 Which statement is correct about fats and oils?

Penyataan manakah yang betul mengenai lemak dan minyak?

A Fats and oils are not important because lead to health problems

Lemak dan minyak tidak penting kerana membawa masalah kesihatan

B Fats found in animals while oils found in plants

Lemak didapati dalam haiwan manakala minyak didapati dalam tumbuhan

C Fats and oils are mixtures of organic acids and glycerol

Lemak dan minyak adalah campuran asid organik dan gliserol

D Fats and oils are chemically different

Lemak dan minyak berbeza daripada segi kimia

11 Diagram 3 shows the preparation of a detergent.

Rajah 3 menunjukkan penyediaan detergen.

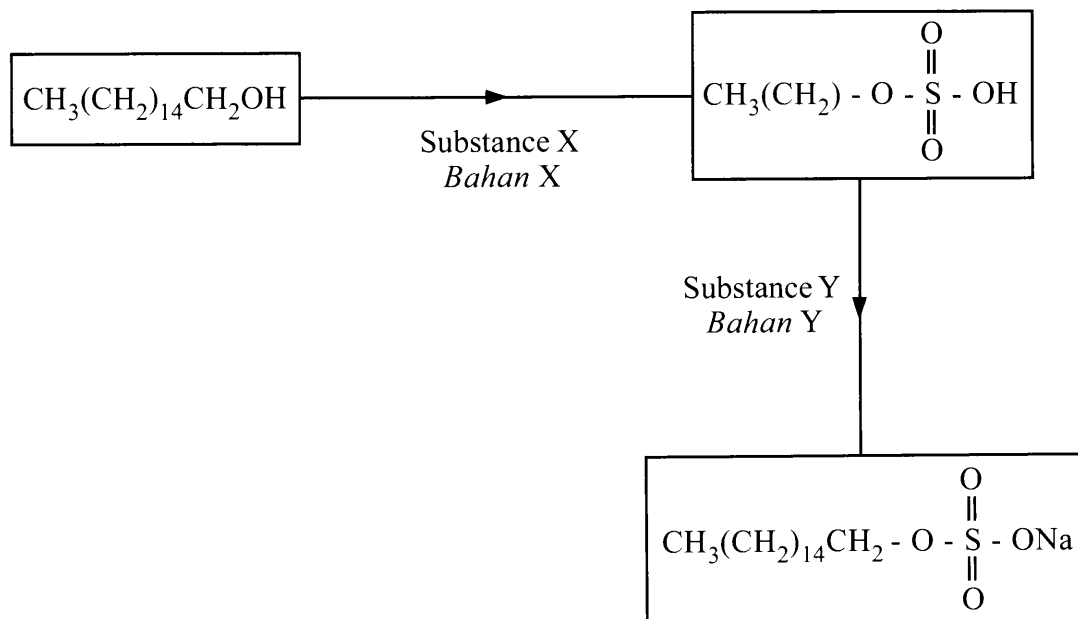


Diagram 3
Rajah 3

What are substance X and substance Y?

Apakah bahan X dan bahan Y?

	Substance X <i>Bahan X</i>	Substance Y <i>Bahan Y</i>
A	Sulphur <i>Sulfur</i>	Sodium hydroxide solution <i>Larutan natrium hidroksida</i>
B	Sulphur <i>Sulfur</i>	Sodium chloride solution <i>Larutan natrium klorida</i>
C	Sulphuric acid <i>Asid sulfurik</i>	Sodium chloride solution <i>Larutan natrium klorida</i>
D	Sulphuric acid <i>Asid sulfurik</i>	Sodium hydroxide solution <i>Larutan natrium hidroksida</i>

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12 Which pair of monomer and polymer is correct?

Pasangan monomer dan polimer manakah yang betul?

	Monomer <i>Monomer</i>	Polymer <i>Polimer</i>
A	Methyl methacrylate <i>Metil metakrilat</i>	Ethene <i>Etena</i>
B	Chloroethene <i>Kloroetena</i>	Polyvinyl chloride <i>Polivinil klorida</i>
C	Isoprene <i>Isoprena</i>	Polystyrene <i>Polistirena</i>
D	Propene <i>Propena</i>	Perspex <i>Perspeks</i>

13 Why carbon-12 was chosen as a reference standard for relative atomic mass and relative molecular mass?

Mengapakah karbon-12 telah dipilih sebagai rujukan piawai untuk jisim atom relatif dan jisim molekul relatif?

A Carbon has three isotopes

Carbon mempunyai tiga isotop

B Carbon is non-metal element

Karbon merupakan unsur bukan logam

C Carbon is a solid and easier to be handle

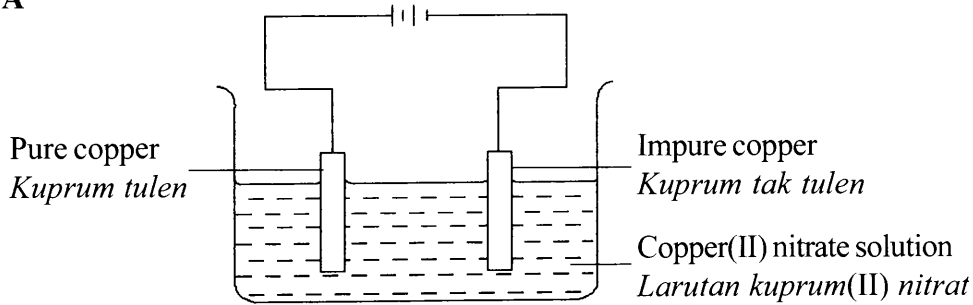
Karbon adalah pepejal dan lebih senang dikendalikan

D Carbon is located in Group 14 in the Periodic Table of Elements

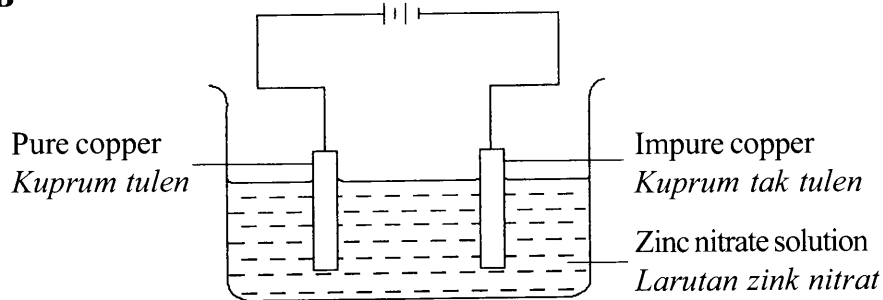
Karbon terletak dalam Kumpulan 14 dalam Jadual Berkala Unsur

14 Which apparatus set-up is correct to purify copper metal?
Susunan radas manakah yang betul untuk menuliskan logam kuprum?

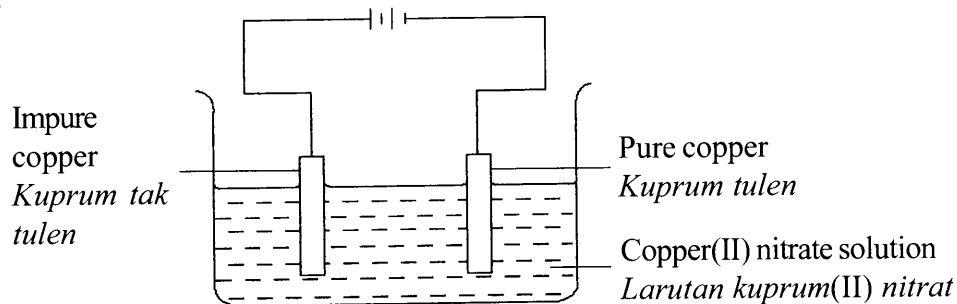
A



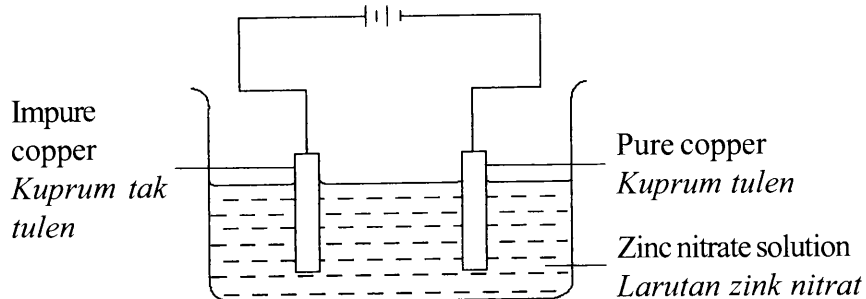
B



C



D



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15 When substance X is added to distilled water, an endothermic reaction occurs.

What is substance X?

Apabila bahan X ditambah ke dalam air suling, tindak balas endotermik berlaku.

Apakah bahan X?

A Potassium oxide

Kalium oksida

B Calcium chloride

Kalsium klorida

C Sodium hydroxide

Natrium hidroksida

D Ammonium nitrate

Ammonium nitrat

16 Which of the following is the characteristic of catalyst?

Antara yang berikut, yang manakah adalah sifat mangkin?

A Catalyst used only in solid form

Mangkin digunakan hanya dalam bentuk pepejal

B Catalyst increases the quantity of the product

Mangkin meningkatkan kuantiti hasil tindak balas

C Physical state of catalyst is unchanged during reaction

Keadaan fizikal mangkin tidak berubah semasa tindak balas

D The mass of catalyst remain the same after the reaction

Jisim mangkin tetap sama selepas tindak balas

17 Compound Z has the following properties.

Sebatian Z mempunyai sifat-sifat berikut.

- * High melting and boiling points
Takat lebur dan takat didih yang tinggi
- * Soluble in water but insoluble in organic solvents
Larut dalam air tetapi tak larut dalam pelarut organik
- * Conducts electricity when in molten or aqueous solution
Mengkonduksikan elektrik dalam keadaan lebur atau larutan akueus

What is Z?

Apakah Z?

- A Acetamide
Asetamida
 - B Naphthalene
Naftalena
 - C Sodium chloride
Natrium klorida
 - D Carbon monoxide
Karbon monoksida
- 18 Which statement explains why water is needed to show the acidic properties of an acid?
Penyataan manakah menerangkan mengapa air diperlukan untuk menunjukkan sifat keasidan bagi suatu asid?
- A Neutralisation of acid occurs in water
Peneutralan asid berlaku dalam air
 - B Ionisation of acid occurs in water
Pengionan asid berlaku dalam air
 - C Water dissolves the acid
Air melarutkan asid
 - D Water oxidises the acid
Air mengoksidakan asid

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19 Which substance is an oxidizing agent?

Bahan manakah adalah agen pengoksidaan?

- A Bromine water
Air bromin
- B Magnesium powder
Serbuk magnesium
- C Iron(II) chloride solution
Larutan ferum(II) klorida
- D Potassium iodide solution
Larutan kalium iodida

20 Diagram 4 shows a process of preparing margarine from palm oil through process X.

Rajah 4 menunjukkan proses menyediakan marjerin daripada minyak kelapa sawit melalui proses X.

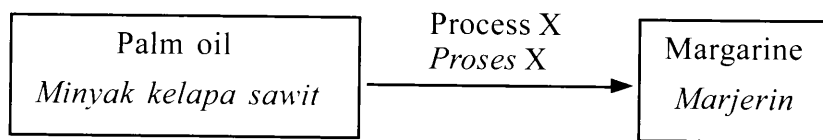


Diagram 4
Rajah 4

What is process X?

Apakah proses X?

- A Halogenation
Penghalogenan
- B Hydrogenation
Penghidrogenan
- C Saponification
Saponifikasi
- D Oxidation
Pengoksidaan

21 Table 1 shows the condition of reactants used in experiment I and experiment II.

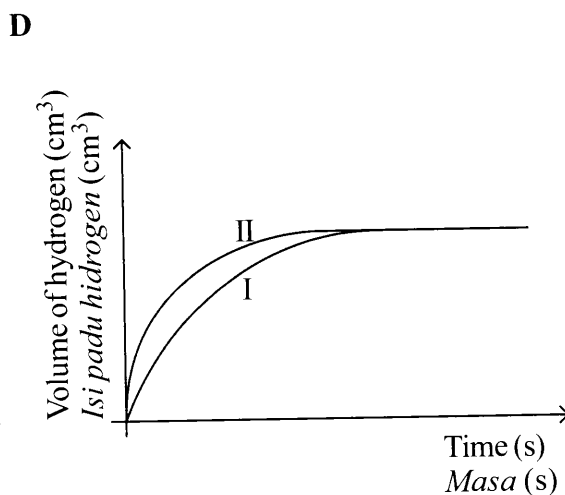
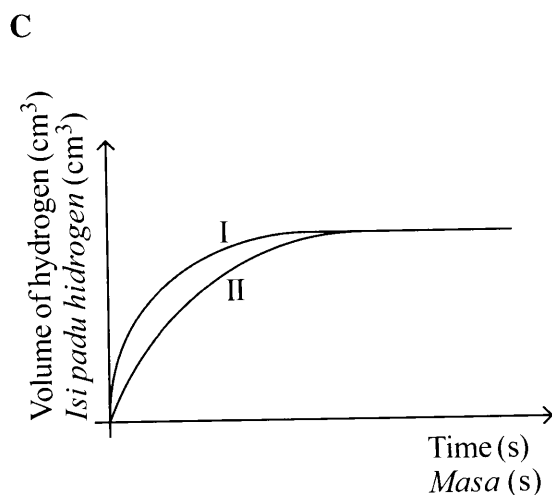
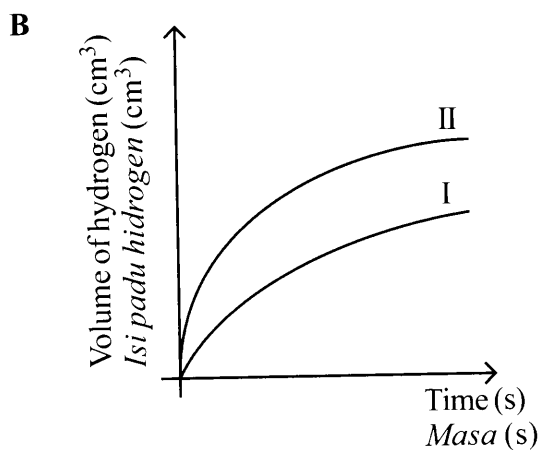
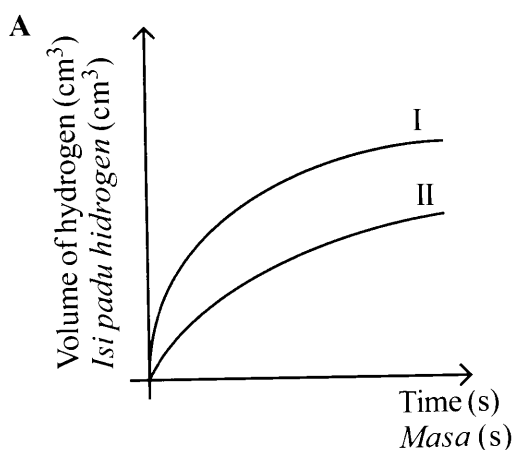
Jadual 1 menunjukkan keadaan bahan tindak balas yang digunakan dalam eksperimen I dan eksperimen II.

Experiment Eksperimen	Condition of reactants Keadaan bahan tindak balas
I	Excess zinc granules + 50 cm ³ of 2.0 mol dm ⁻³ hydrochloric acid Ketulan zink berlebihan + 50 cm ³ asid hidroklorik 2.0 mol dm ⁻³
II	Excess zinc powder + 50 cm ³ of 2.0 mol dm ⁻³ hydrochloric acid Serbuk zink berlebihan + 50 cm ³ asid hidroklorik 2.0 mol dm ⁻³

Table 1
Jadual 1

Which graph shows the correct curve for experiment I and experiment II?

Graf manakah yang menunjukkan lengkung yang betul bagi eksperimen I dan eksperimen II?



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22 Diagram 5 shows a simple voltaic cell.

Rajah 5 menunjukkan suatu sel volta ringkas.

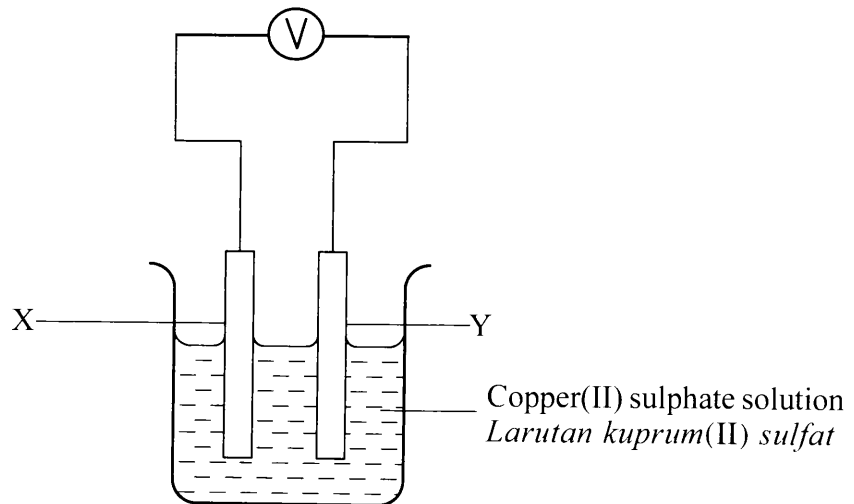


Diagram 5
Rajah 5

Which pair of materials are suitable to be used as electrodes X and Y?

Pasangan bahan manakah yang sesuai digunakan sebagai elektrod X dan Y?

	X	Y
A	Magnesium <i>Magnesium</i>	Copper <i>Kuprum</i>
B	Magnesium <i>Magnesium</i>	Carbon <i>Karbon</i>
C	Carbon <i>Karbon</i>	Carbon <i>Karbon</i>
D	Copper <i>Kuprum</i>	Copper <i>Kuprum</i>

- 23 Diagram 6 shows a chemical cell. The electrons move from electrode L to electrode M through the circuit.

Rajah 6 menunjukkan satu sel kimia. Elektron bergerak dari elektrod L ke elektrod M melalui litar.

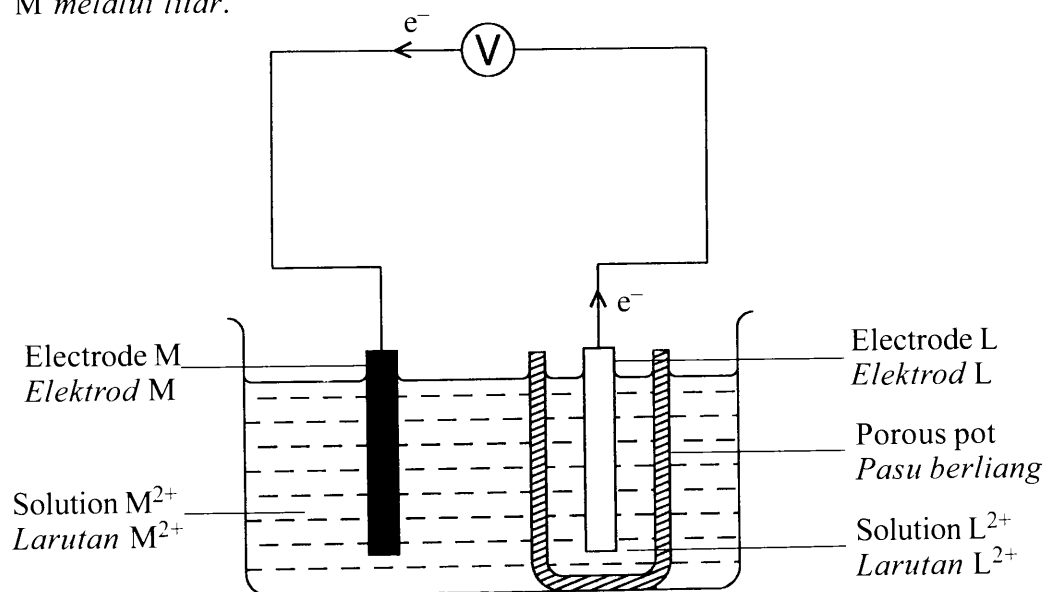


Diagram 6
Rajah 6

Which statement is correct about the reaction in the chemical cell?

Penyataan manakah yang betul tentang tindak balas dalam sel kimia itu?

- A** Ion M^{2+} is oxidised
Ion M^{2+} dioksidakan
- B** L is more electropositive than M
L lebih elektropositif daripada M
- C** Reduction occurs at electrode L
Penurunan berlaku di elektrod L
- D** L is zinc and M is magnesium
L ialah zink dan M ialah magnesium

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24 Diagram 7 shows the structural formulae of two hydrocarbons.

Rajah 7 menunjukkan formula struktur bagi dua hidrokarbon.

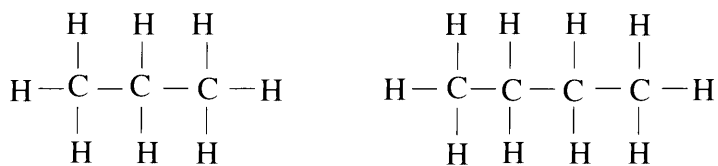


Diagram 7
Rajah 7

Which property of both compounds is similar?

Sifat manakah yang sama bagi kedua-dua sebatian?

- A Melting point
Takat lebur
- B Molar mass
Jisim molar
- C Solubility
Keterlarutan
- D Density
Ketumpatan

25 Table 2 shows the electron arrangement of element Y and element Z.

Jadual 2 menunjukkan susunan elektron bagi unsur Y dan unsur Z.

Element Y <i>Unsur Y</i>	Element Z <i>Unsur Z</i>
2.4	2.6

Table 2
Jadual 2

What is the formula and the type of bond of the compound formed from the reaction between Y and Z?

Apakah formula dan jenis ikatan bagi sebatian yang terbentuk daripada tindak balas antara Y dan Z?

	Formula <i>Formula</i>	Type of bond <i>Jenis ikatan</i>
A	Y_2Z	Covalent <i>Kovalen</i>
B	Y_2Z	Ionic <i>Ionik</i>
C	YZ_2	Covalent <i>Kovalen</i>
D	YZ_2	Ionic <i>Ionik</i>

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26 Diagram 8 shows the heating curve of solid benzoic acid.

Rajah 8 menunjukkan lengkung pemanasan bagi pepejal asid benzoik.

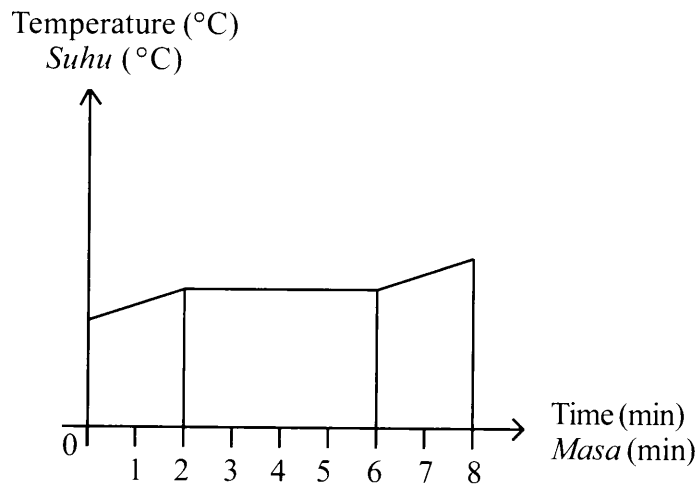


Diagram 8
Rajah 8

Which statement can be deduced from Diagram 8?

Penyataan manakah yang boleh dideduksikan daripada Rajah 8?

- A No heat is absorbed in the first 2 minutes
Tiada haba diserap dalam 2 minit pertama
- B Benzoic acid needs 8 minutes to melt completely
Asid benzoik memerlukan 8 minit untuk melebur selengkapnya
- C Benzoic acid undergoes physical changes between 2nd minute to 6th minute
Asid benzoik mengalami perubahan fizikal diantara minit ke 2 hingga minit ke 6
- D The attractive forces between particles of benzoic acid become stronger after 6 minutes
Daya tarikan antara zarah-zarah asid benzoik menjadi semakin kuat selepas 6 minit

27 Diagram 9 shows the apparatus set-up to study the transfer of electron at a distance.

Rajah 9 menunjukkan susunan radas untuk mengkaji pemindahan elektron pada suatu jarak.

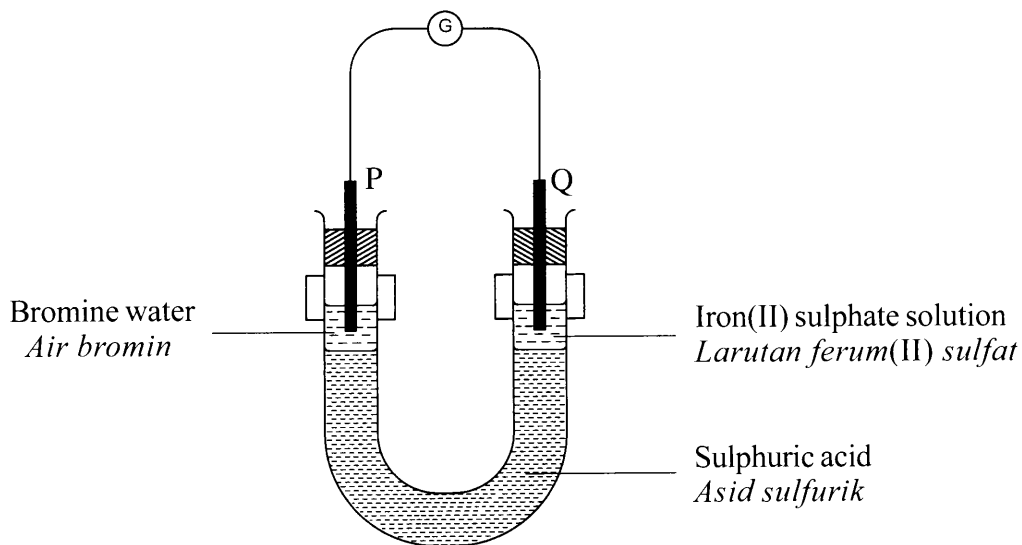


Diagram 9
Rajah 9

Which of the following occurs in Diagram 9?

Antara yang berikut, yang manakah berlaku dalam Rajah 9?

- A Iron deposited at electrode Q
Ferum terenap di elektrod Q
- B Electrons flow through sulphuric acid
Elektron mengalir melalui asid sulfurik
- C Hydrogen gas released at electrode P
Gas hidrogen terbebas di elektrod P
- D Brown colour of bromine turns to colourless
Warna perang bromin menjadi tidak berwarna

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28 Table 3 shows information about three chemical cells.

Jadual 3 menunjukkan maklumat tentang tiga sel kimia.

Chemical cell <i>Sel kimia</i>	Pair of electrodes <i>Pasangan elektrod</i>	Voltage (V) <i>Voltan (V)</i>	Positive terminal <i>Terminal positif</i>
I	Y and Z <i>Y dan Z</i>	0.7	Z
II	Z and E <i>Z dan E</i>	1.2	E
III	E and X <i>E dan X</i>	1.4	E

Table 3

Jadual 3

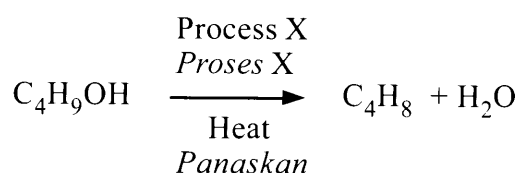
Which is the correct arrangement in ascending order of the metals in tendency to donate electrons?

Susunan logam secara menaik yang manakah betul bagi kecenderungan untuk menderma elektron?

- A Y, X, Z, E
- B X, Y, Z, E
- C E, Z, Y, X
- D E, Z, X, Y

29 The following equation shows the conversion of butanol to butene.

Persamaan berikut menunjukkan penukaran butanol kepada butena.



What is process X?

Apakah proses X?

- A Oxidation
Pengoksidaan
- B Hydrolysis
Hidrolisis
- C Dehydration
Pengdehidratan
- D Hydrogenation
Penghidrogenan

- 30 Diagram 10 shows two beakers, P and Q that contain granulated limestones, CaCO_3 and pH paper respectively in dilute ethanoic acid.

Rajah 10 menunjukkan dua bikar, P dan Q yang mengandungi ketulan batu kapur, CaCO_3 dan kertas pH masing-masing dalam asid etanoik cair.

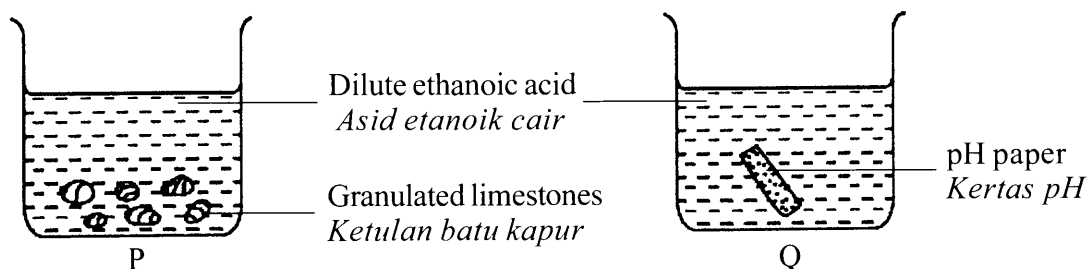


Diagram 10
Rajah 10

Which observation is correct?

Pemerhatian yang manakah betul?

	P	Q
A	Gas bubbles released <i>Gelembung gas terbebas</i>	pH value = 1 <i>nilai pH = 1</i>
B	Gas bubbles released <i>Gelembung gas terbebas</i>	pH value = 4 <i>nilai pH = 4</i>
C	Solution turns cloudy <i>Larutan menjadi keruh</i>	pH value = 4 <i>nilai pH = 4</i>
D	No change <i>Tiada perubahan</i>	pH value = 1 <i>nilai pH = 1</i>

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31 Element X reacts with sulphur to form a compound with formula, X_2S .

What is the correct electron arrangement of X?

[Proton number: S = 16]

Unsur X bertindak balas dengan sulfur membentuk satu sebatian dengan formula, X_2S .

Apakah susunan elektron yang betul bagi X?

[Nombor proton: S = 16]

A 2.8.1

B 2.8.2

C 2.8.3

D 2.8.4

- 32 Diagram 11 shows the apparatus set-up for an experiment to determine the heat of combustion of a fuel.

Rajah 11 menunjukkan susunan radas bagi eksperimen untuk menentukan haba pembakaran suatu bahan api.

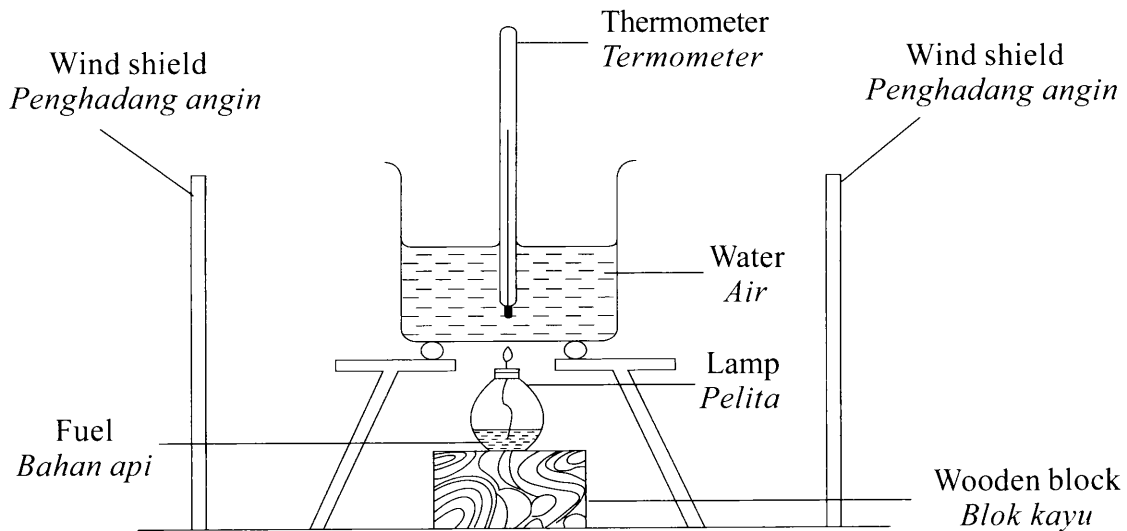


Diagram 11
Rajah 11

Which of the following are used to determine the heat released of the fuel?

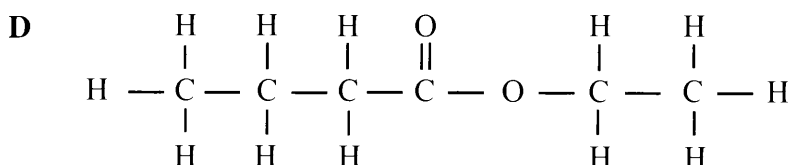
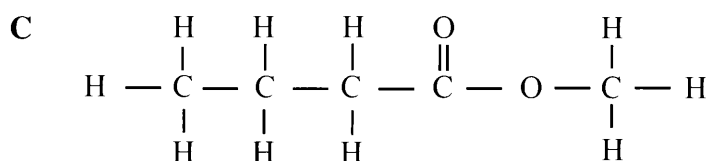
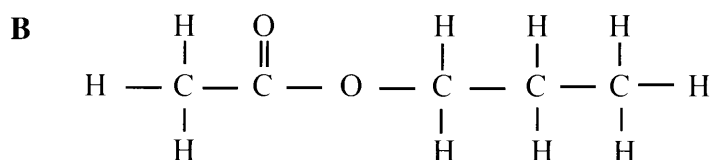
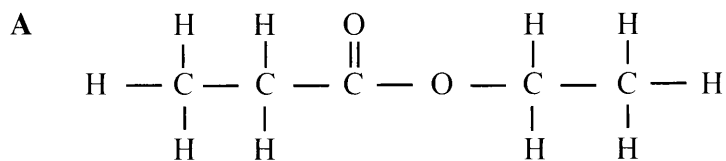
Antara yang berikut, yang manakah digunakan untuk menentukan haba terbebas bahan api tersebut?

- I Rise of water temperature
Kenaikan suhu air
 - II Density of fuel
Ketumpatan bahan api
 - III Mass of water
Jisim air
 - IV Volume of fuel
Isi padu bahan api
- A I and II
I dan II
 - B I and III
I dan III
 - C II and IV
II dan IV
 - D III and IV
III dan IV

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- 33 What is the structural formula for an ester formed when ethanol, C_2H_5OH reacts with propanoic acid, C_2H_5COOH ?

Apakah formula struktur bagi suatu ester yang terbentuk apabila etanol, C_2H_5OH bertindak balas dengan asid propanoik, C_2H_5COOH ?



- 34 Table 4 shows the concentration of hydrogen ions in hydrochloric acid and sulphuric acid.

Jadual 4 menunjukkan kepekatan ion hidrogen dalam asid hidroklorik dan asid sulfurik.

Acid Asid	Concentration of hydrogen ions (mol dm⁻³) Kepekatan ion hidrogen (mol dm⁻³)
0.1 mol dm ⁻³ hydrochloric acid <i>Asid hidroklorik 0.1 mol dm⁻³</i>	0.1
0.1 mol dm ⁻³ sulphuric acid <i>Asid sulfurik 0.1 mol dm⁻³</i>	0.2

Table 4
Jadual 4

Why is the concentration of hydrogen ions in sulphuric acid higher than in hydrochloric acid?

Mengapakah kepekatan ion hidrogen dalam asid sulfurik lebih tinggi daripada dalam asid hidroklorik?

- A Sulphuric acid is denser
Asid sulfurik lebih tumpat
- B Sulphuric acid is more soluble in water
Asid sulfurik lebih mudah larut dalam air
- C Sulphuric acid is a stronger acid
Asid sulfurik ialah asid yang lebih kuat
- D Sulphuric acid is a diprotic acid
Asid sulfurik ialah asid diprotik

- 35 The boiling point of chlorine is lower than bromine.

Which statement best explains this phenomena?

Takat didih klorin lebih rendah daripada bromin.

Penyataan manakah yang paling baik menerangkan fenomena ini?

- A The atomic size of chlorine is smaller
Saiz atom klorin lebih kecil
- B The number of electrons in chlorine is smaller
Bilangan elektron dalam klorin lebih kecil
- C The covalent bond between chlorine atoms is weaker
Ikatan kovalen antara atom klorin lebih lemah
- D The force of attraction between chlorine molecules is weaker
Daya tarikan antara molekul klorin lebih lemah

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- 36 Dry ammonia gas is prepared in the laboratory by heating ammonium chloride with calcium hydroxide.

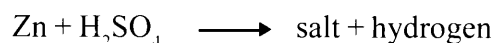
Which substance is used as a drying agent in the preparation?

Gas ammonia kering disediakan dalam makmal melalui pemanasan ammonium klorida dengan kalsium hidroksida.

Bahan manakah yang digunakan sebagai agen pengering dalam penyediaan itu?

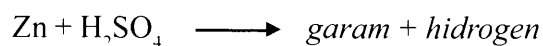
- A Soda lime
Soda kapur
- B Lime water
Air kapur
- C Calcium carbonate
Kalsium karbonat
- D Dilute nitric acid
Asid nitrik cair

- 37 The following equation represents a reaction between zinc metal and sulphuric acid.



What is the name of the salt and its solubility in water?

Persamaan berikut mewakili tindak balas antara logam zink dan asid sulfurik.



Apakah nama bagi garam itu dan keterlarutannya dalam air?

	Name of salt <i>Nama garam</i>	Solubility in water <i>Keterlarutan dalam air</i>
A	Zinc sulphate <i>Zink sulfat</i>	Soluble <i>Larut</i>
B	Zinc oxide <i>Zink oksida</i>	Insoluble <i>Tidak larut</i>
C	Zinc oxide <i>Zink oksida</i>	Soluble <i>Larut</i>
D	Zinc sulphate <i>Zink sulfat</i>	Insoluble <i>Tidak larut</i>

38 Diagram 12 shows the results of experiment I and experiment II for decomposition of hydrogen peroxide solution in the presence of a catalyst.

Rajah 12 menunjukkan keputusan eksperimen I dan eksperimen II bagi penguraian larutan hidrogen peroksida dengan kehadiran suatu mangkin.

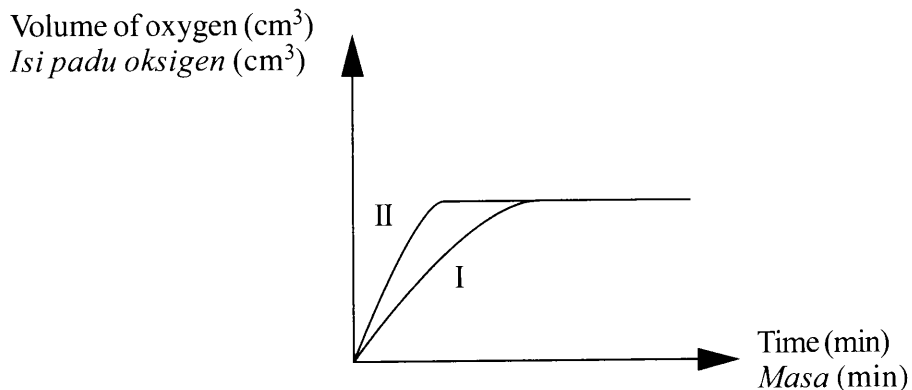


Diagram 12
Rajah 12

Experiment I uses 50 cm³ of 1.0 mol dm⁻³ of hydrogen peroxide solution at temperature 21°C.

What is used in Experiment II to obtain the curve shown in Diagram 12?

Eksperimen I menggunakan 50 cm³ larutan hidrogen peroksida 1.0 mol dm⁻³ pada suhu 21°C.

Apakah yang digunakan dalam Eksperimen II untuk memperoleh lengkung yang ditunjukkan dalam Rajah 12?

	Hydrogen peroxide <i>Hidrogen peroksida</i>		Temperature (°C) <i>Suhu (°C)</i>
	Volume (cm ³) <i>Isi padu (cm³)</i>	Concentration (mol dm ⁻³) <i>Kepekatan (mol dm⁻³)</i>	
A	25	0.5	30
B	25	1.0	25
C	50	0.5	25
D	50	1.0	30

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- 39 0.2 mol of zinc powder react with excess dilute hydrochloric acid. After 30 seconds, 0.05 mol of zinc remains as residue.

What is the average rate of the reaction?

0.2 mol serbuk zink bertindak balas dengan asid hidroklorik cair berlebihan. Selepas 30 saat, didapati 0.05 mol zink tertinggal sebagai baki.

Berapakah kadar purata bagi tindak balas itu?

- A $1.7 \times 10^{-3} \text{ mol s}^{-1}$
B $5.0 \times 10^{-3} \text{ mol s}^{-1}$
C $6.7 \times 10^{-3} \text{ mol s}^{-1}$
D $8.3 \times 10^{-3} \text{ mol s}^{-1}$

- 40 Which of the following contains the same number of molecules as in 8.8 g carbon dioxide gas?

[Relative atomic mass : H = 1; C = 12; O = 16; S = 32; I = 127]

Antara yang berikut, yang manakah mempunyai bilangan molekul yang sama seperti yang terdapat dalam 8.8 g gas karbon dioksida?

[Jisim atom relatif : H = 1; C = 12; O = 16; S = 32; I = 127]

- A 3.6 g of water
3.6 g air
B 25.4 g of iodine
25.4 g iodin
C 3.2 g of oxygen gas
3.2 g gas oksigen
D 9.6 g of sulphur dioxide
9.6 g sulfur dioksida

- 41 A compound of magnesium nitrite contains 72% of magnesium and 28% of nitrogen.

What is the empirical formula of magnesium nitrite?

[Relative atomic mass: N = 14; Mg = 24]

Suatu sebatian magnesium nitrit mengandungi 72% magnesium dan 28% nitrogen.

Apakah formula empirik bagi magnesium nitrit?

[Jisim atom relatif: N = 14; Mg = 24]

- A MgN_2
B Mg_2N
C Mg_2N_3
D Mg_3N_2

42 3.2 g of gas X occupies 1120 cm³ at standard temperature and pressure(STP).

What is the relative molecular mass of X?

[Molar volume of gas at STP = 22.4 dm³ mol⁻¹]

3.2 g gas X menempati 1120 cm³ pada suhu dan tekanan piawai(STP).

Berapakah jisim molekul relatif bagi X?

[Isi padu molar gas pada STP = 22.4 dm³ mol⁻¹]

- A 16
- B 32
- C 64
- D 70

43 Diagram 13 shows the structural formula of an organic compound.

Rajah 13 menunjukkan formula struktur suatu sebatian organik.

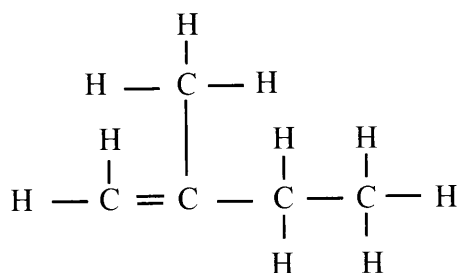


Diagram 13

Rajah 13

What is the IUPAC name of the organic compound?

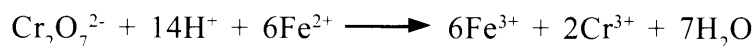
Apakah nama IUPAC bagi sebatian organik itu?

- A 2-methylbut-1-ene
2-metilbut-1-ena
- B 2-methylbut-2-ene
2-metilbut-2-ena
- C 2-ethylbut-3-ene
2-etilbut-3-ena
- D 3-methylbut-3-ene
3-metilbut-3-ena

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- 44 The following ionic equation represents the reaction between acidified potassium dichromate(VI) solution and iron(II) sulphate solution.

Persamaan ion berikut mewakili tindak balas antara larutan kalium dikromat(VI) berasid dengan larutan ferum(II) sulfat.



What is the change of oxidation number of chromium in the reaction?

Apakah perubahan nombor pengoksidaan kromium dalam tindak balas itu?

- A +6 to +2
+6 kepada +2
- B +6 to +3
+6 kepada +3
- C +7 to +2
+7 kepada +2
- D +7 to +3
+7 kepada +3
- 45 14.9 g of potassium chloride, KCl is dissolved in distilled water to produce 0.4 mol dm⁻³ potassium chloride solution.

What is the volume of distilled water needed to dissolve potassium chloride?

[Molar mass: KCl = 74.5 g mol⁻¹]

14.9 g kalium klorida, KCl dilarutkan dalam air suling untuk menghasilkan 0.4 mol dm⁻³ larutan kalium klorida.

Berapakah isi padu air suling diperlukan untuk melarutkan kalium klorida?

[Jisim molar: KCl = 74.5 g mol⁻¹]

- A 50 cm³
- B 200 cm³
- C 500 cm³
- D 2000 cm³

- 46 An atom of element E has 16 neutrons. The nucleon number of element E is 31. Atom E receives electrons to form ion E.

How many electrons in ion E?

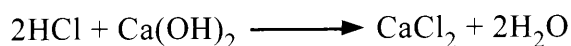
Suatu atom bagi unsur E mempunyai 16 neutron. Nombor nukleon bagi unsur E ialah 31. Atom E menerima elektron untuk membentuk ion E.

Berapakah bilangan elektron dalam ion E?

- A 10
- B 15
- C 16
- D 18

- 47 The following equation represents the reaction between hydrochloric acid and calcium hydroxide solution.

Persamaan berikut mewakili tindak balas antara asid hidroklorik dan larutan kalsium hidroksida.



20.0 cm³ of 0.1 mol dm⁻³ hydrochloric acid is neutralised by 50.0 cm³ of calcium hydroxide solution.

What is the molarity of the calcium hydroxide solution?

20.0 cm³ asid hidroklorik 0.1 mol dm⁻³ dineutralkan oleh 50.0 cm³ larutan kalsium hidroksida.

Berapakah kemolaran larutan kalsium hidroksida itu?

- A 0.020 mol dm⁻³
- B 0.040 mol dm⁻³
- C 0.125 mol dm⁻³
- D 0.250 mol dm⁻³

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- 48 Excess zinc powder is added to 20.0 cm^3 of 0.1 mol dm^{-3} silver nitrate solution. The temperature of the mixture increases by 10.0°C .

What is the heat of displacement of silver by zinc?

[Specific heat capacity of a solution = $4.2 \text{ J g}^{-1}\text{C}^{-1}$]

Serbuk zink berlebihan ditambahkan kepada 20.0 cm^3 larutan argentum nitrat 0.1 mol dm^{-3} . Suhu campuran meningkat sebanyak 10.0°C .

Berapakah haba penyesaran bagi argentum oleh zink?

[Muatan haba tentu larutan = $4.2 \text{ J g}^{-1}\text{C}^{-1}$]

- A - 210 kJ mol^{-1}
B - 420 kJ mol^{-1}
C - 840 kJ mol^{-1}
D - 1680 kJ mol^{-1}
- 49 What is the number of nitrogen atoms in 40.0 g of NH_4NO_3 ?
[Avogadro's constant = $6.02 \times 10^{23} \text{ mol}^{-1}$; Molar mass of $\text{NH}_4\text{NO}_3 = 80 \text{ g mol}^{-1}$]
- Berapakah bilangan atom nitrogen dalam 40.0 g NH_4NO_3 ?
[Pemalar Avogadro = $6.02 \times 10^{23} \text{ mol}^{-1}$; Jisim molar $\text{NH}_4\text{NO}_3 = 80 \text{ g mol}^{-1}$]*
- A 6.02×10^{23}
B 3.01×10^{23}
C 2.41×10^{23}
D 1.51×10^{23}

50 Diagram 14 shows a water droplet on a piece of iron.

Rajah 14 menunjukkan setitis air di atas sebatang besi.

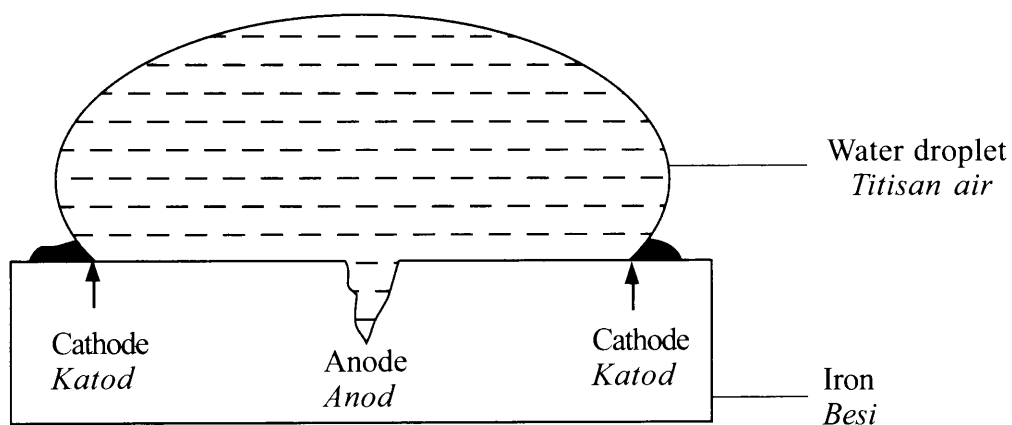


Diagram 14
Rajah 14

Which equation occurs at the cathode?

Persamaan manakah yang berlaku di katod?

- A $\text{Fe} \longrightarrow \text{Fe}^{2+} + 2\text{e}^{-}$
- B $\text{Fe}^{2+} + 2\text{e}^{-} \longrightarrow \text{Fe}$
- C $\text{O}_2 + 2\text{H}_2\text{O} + 4\text{e}^{-} \longrightarrow 4\text{OH}^{-}$
- D $4\text{OH}^{-} \longrightarrow \text{O}_2 + 2\text{H}_2\text{O} + \text{O}_2$

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

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 scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik.