

SULIT



LEMBAGA PEPERIKSAAN
KEMENTERIAN PENDIDIKAN MALAYSIA

SIJIL PELAJARAN MALAYSIA 2014

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 32 halaman bercetak.

[Lihat halaman sebelah

SULIT

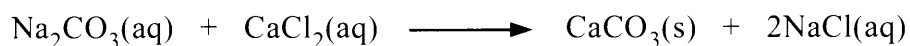
4541/1 © 2014 Hak Cipta Kerajaan Malaysia

more examination papers at :
www.myschoolchildren.com

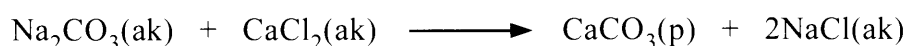


- 1 Which of the following is correct about an electrolyte?
Antara yang berikut, yang manakah betul tentang elektrolit?
- A Dissolves in water
Larut dalam air
 - B Exists as liquid at room temperature
Wujud sebagai cecair pada suhu bilik
 - C Conducts electricity in solid state
Mengkonduksi elektrik dalam keadaan pepejal
 - D Has freely moving ions in aqueous state
Mempunyai ion-ion bergerak bebas dalam keadaan akueus
- 2 Sulphuric acid, H_2SO_4 , is produced in industry through Contact Process.
What is the catalyst used in Contact Process?
Asid sulfurik, H_2SO_4 , dihasilkan dalam industri melalui Proses Sentuh.
Apakah mangkin yang digunakan dalam Proses Sentuh?
- A Iron
Besi
 - B Platinum
Platinum
 - C Vanadium(V) oxide
Vanadium(V) oksida
 - D Manganese(IV) oxide
Mangan(IV) oksida

3 The following equation represents a chemical reaction.



Persamaan berikut mewakili satu tindak balas kimia.



Which statement is correct?

Penyataan manakah yang betul?

- A** Two moles of sodium carbonate react with one mole of calcium chloride
Dua mol natrium karbonat bertindak balas dengan satu mol kalsium klorida
- B** The products are calcium carbonate precipitate and sodium chloride solution
Hasil tindak balas ialah mendakan kalsium karbonat dan larutan natrium klorida
- C** The reactants are solid sodium carbonate and calcium chloride solution
Bahan tindak balas ialah pepejal natrium karbonat dan larutan kalsium klorida
- D** Two moles of calcium carbonate and one mole of sodium chloride are formed
Dua mol kalsium karbonat dan satu mol natrium klorida terbentuk

- 4 The following information shows the arrangement of some metals in the reactivity series.

potassium, sodium, R, magnesium, L, tin

 Reactivity decreases →

Maklumat berikut menunjukkan susunan beberapa logam dalam siri kereaktifan.

kalium, natrium, R, magnesium, L, stanum

Kereaktifan menurun →

What are R and L?

Apakah R dan L?

	R	L
A	Calcium <i>Kalsium</i>	Iron <i>Besi</i>
B	Calcium <i>Kalsium</i>	Copper <i>Kuprum</i>
C	Aluminium <i>Aluminium</i>	Copper <i>Kuprum</i>
D	Aluminium <i>Aluminium</i>	Iron <i>Besi</i>

- 5 Which statement is correct about acid?

Penyataan manakah yang betul tentang asid?

- A** Acid solution conducts electric current
Larutan asid mengkonduksi arus elektrik
- B** Strong acid ionizes partially in water
Asid kuat mengion separa dalam air
- C** Weak acid produces high concentration of hydrogen ions
Asid lemah menghasilkan kepekatan ion hidrogen yang tinggi
- D** The presence of water enables acid to produce hydroxide ions
Kehadiran air membolehkan asid menghasilkan ion hidroksida

- 6 Which of the following is correct about alkanes?

Antara yang berikut, yang manakah betul tentang alkana?

- A The compound has hydroxyl group
Sebatian mempunyai kumpulan hidroksil
- B The compound is a saturated hydrocarbon
Sebatian adalah satu hidrokarbon tepu
- C The compound has general formula of C_nH_{2n}
Sebatian mempunyai formula am C_nH_{2n}
- D The compound consists of double bond between carbon atoms
Sebatian mengandungi ikatan ganda dua antara atom-atom karbon

- 7 The molecular formulae of calcium nitrate and potassium phosphate are $Ca(NO_3)_2$ and K_3PO_4 respectively.

What is the molecular formula of calcium phosphate?

Formula molekul bagi kalsium nitrat dan kalium fosfat adalah $Ca(NO_3)_2$ dan K_3PO_4 masing-masing.

Apakah formula molekul bagi kalsium fosfat?

- A $CaPO_4$
- B Ca_2PO_4
- C $Ca_2(PO_4)_3$
- D $Ca_3(PO_4)_2$

8 Diagram 1 shows a pressure cooker.

Rajah 1 menunjukkan sebuah periuk tekanan.

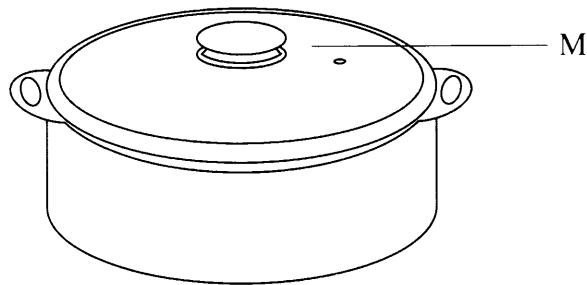


Diagram 1
Rajah 1

What is substance M?

Apakah bahan M?

A Lead glass

Kaca plumbum

B Photochromic glass

Kaca fotokromik

C Soda lime glass

Kaca soda kapur

D Borosilicate glass

Kaca borosilikat

9 Which statement explains why alloy is harder than pure metal?

Penyataan manakah yang menerangkan mengapa aloi lebih keras daripada logam tulen?

A Atom of other metal reacts with atom of pure metal

Atom logam lain bertindak balas dengan atom logam tulen

B Atom of other metal reduces atom of pure metal from sliding

Atom logam lain mengurangkan atom logam tulen daripada menggelongsor

C Bonds between atom in alloy is stronger

Ikatan antara atom dalam aloi lebih kuat

D Density of alloy is higher

Ketumpatan aloi lebih tinggi

10 What are the products formed when propane is burnt in excess oxygen?

Apakah bahan yang terhasil apabila propana terbakar dalam oksigen berlebihan?

I Water

Air

II Carbon

Karbon

III Carbon dioxide

Karbon dioksida

IV Carbon monoxide

Karbon monoksida

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

11 Which substance neutralises a solution with the pH value of 4?

Bahan manakah meneutralkan suatu larutan dengan nilai pH 4?

A Distilled water

Air suling

B Sodium chloride

Natrium klorida

C Sodium hydroxide

Natrium hidroksida

D Dilute ethanoic acid

Asid etanoik cair

[Lihat halaman sebelah
SULIT

12 Which of the following is a soluble salt?

Antara yang berikut, yang manakah adalah satu garam terlarutkan?

- A Iron(II) chloride
Ferum(II) klorida
- B Silver chloride
Argentum klorida
- C Calcium sulphate
Kalsium sulfat
- D Lead(II) sulphate
Plumbum(II) sulfat

13 Which characteristic is similar for all elements in Group 17 of the Periodic Table?

Ciri manakah yang sama bagi semua unsur Kumpulan 17 dalam Jadual Berkala?

- A Form coloured ions
Membentuk ion-ion berwarna
- B High melting and boiling points
Takat lebur dan takat didih yang tinggi
- C Exist as gas at room temperature
Wujud sebagai gas pada suhu bilik
- D Dissolve in water to form acidic solution
Larut dalam air untuk membentuk larutan berasid

14 Which of the following is an example of endothermic reaction?

Antara yang berikut, yang manakah contoh bagi tindak balas endotermik?

- A Solid sodium hydroxide dissolved in distilled water
Pepejal natrium hidroksida dilarutkan dalam air suling
- B Solid ammonium nitrate dissolved in distilled water
Pepejal ammonium nitrat dilarutkan dalam air suling
- C Dilute hydrochloric acid added to silver nitrate solution
Asid hidroklorik cair ditambahkan kepada larutan argentum nitrat
- D Dilute hydrochloric acid added to potassium hydroxide solution
Asid hidroklorik cair ditambahkan kepada larutan kalium hidroksida

- 15 What is the food additive used to prevent crackers from turning rancid and changing its taste?

Apakah bahan tambah makanan yang digunakan untuk mencegah keropok daripada menjadi tengik dan berubah rasanya?

A Stabiliser

Penstabil

B Flavouring

Perisa

C Antioxidant

Pengantioksida

D Preservative

Pengawet

- 16 Cyclohexane, C_6H_{12} is an organic solvent.

Which substance is soluble in cyclohexane?

Sikloheksana, C_6H_{12} merupakan suatu pelarut organik.

Bahan manakah yang larut dalam sikloheksana?

A Limestone

Batu kapur

B Naphthalene

Naftalena

C Sodium sulphate

Natrium sulfat

D Aluminium oxide

Aluminium oksida

- 17 What is the meaning of the rate of reaction?

Apakah maksud kadar tindak balas?

A Decrease in amount of product

Pengurangan amaun hasil tindak balas

B Decrease in amount of product against time

Pengurangan amaun hasil tindak balas dengan masa

C Increase in amount of product against time

Peningkatan amaun hasil tindak balas dengan masa

D Increase in amount of reactant against time

Peningkatan amaun bahan tindak balas dengan masa

[Lihat halaman sebelah
SULIT

18 What is the main source in the production of detergent?

Apakah sumber utama dalam penghasilan detergen?

- A Palm oil
Minyak sawit
- B Animal fat
Lemak haiwan
- C Ammonia
Ammonia
- D Petroleum
Petroleum

19 A pupil wants to produce a rubber strip that is harder and resistant to heat.

He dips the rubber strip in a beaker containing methylbenzene and substance Q.

What is substance Q?

Seorang pelajar ingin menghasilkan kepingan getah yang lebih keras dan tahan haba.

Dia mencelupkan kepingan getah itu ke dalam bikar yang mengandungi metilbenzena dan bahan Q.

Apakah bahan Q?

- A Potassium hydroxide
Kalium hidroksida
- B Disulphur dichloride
Disulfur diklorida
- C Hydrogen chloride
Hidrogen klorida
- D Ethanoic acid
Asid etanoik

20 Which of the following absorbs heat?

Antara yang berikut, yang manakah menyerap haba?

- A Water \longrightarrow steam
Air \longrightarrow stim
- B Liquid sulphur \longrightarrow solid sulphur
Cecair sulfur \longrightarrow pepejal sulfur
- C Hydrogen + nitrogen \longrightarrow ammonia
Hidrogen + nitrogen \longrightarrow ammonia
- D Magnesium + hydrochloric acid \longrightarrow magnesium chloride + hydrogen
Magnesium + asid hidroklorik \longrightarrow magnesium klorida + hidrogen

- 21 Diagram 2 shows the set-up of apparatus to determine the heat of precipitation of silver chloride.

Rajah 2 menunjukkan susunan radas bagi menentukan haba pemendakan argentum klorida.

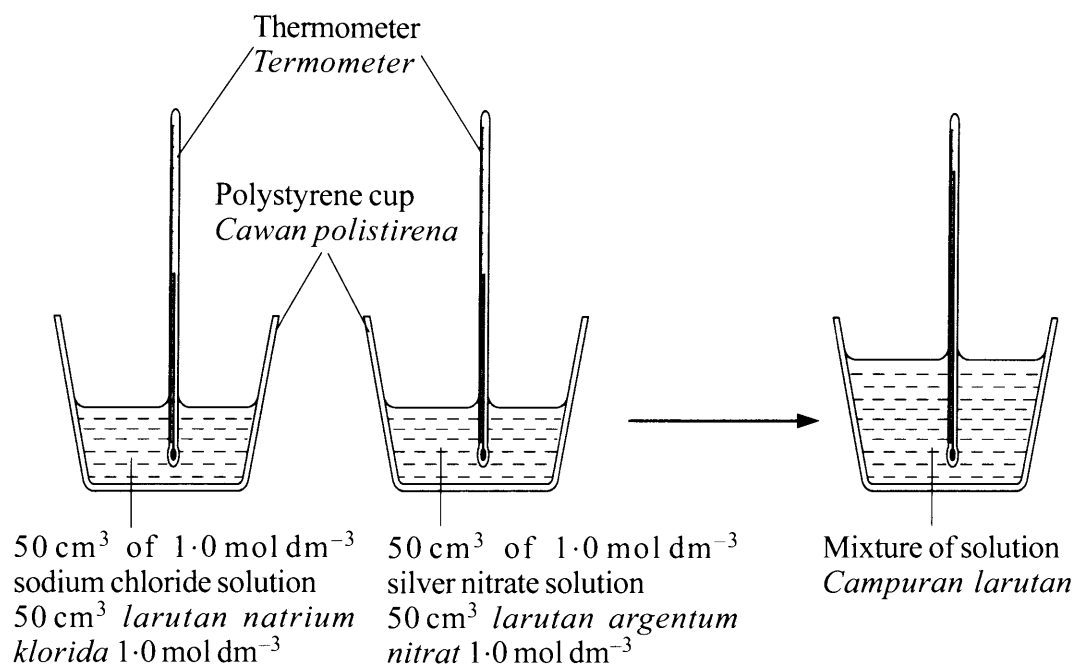


Diagram 2
Rajah 2

The temperature of the mixture rises by 5 °C.

Which solution can be used to replace sodium chloride solution to get the same rise in temperature?

Suhu campuran meningkat sebanyak 5 °C.

Larutan manakah boleh digunakan bagi menggantikan larutan natrium klorida bagi mendapatkan kenaikan suhu yang sama?

- A 50 cm³ of 1.0 mol dm⁻³ of potassium chloride solution
50 cm³ larutan kalium klorida 1.0 mol dm⁻³
- B 50 cm³ of 1.0 mol dm⁻³ magnesium chloride solution
50 cm³ larutan magnesium klorida 1.0 mol dm⁻³
- C 50 cm³ of 1.0 mol dm⁻³ barium chloride solution
50 cm³ larutan barium klorida 1.0 mol dm⁻³
- D 50 cm³ of 1.0 mol dm⁻³ aluminium chloride solution
50 cm³ larutan aluminium klorida 1.0 mol dm⁻³

[Lihat halaman sebelah
SULIT

22 The following information is about atom T.

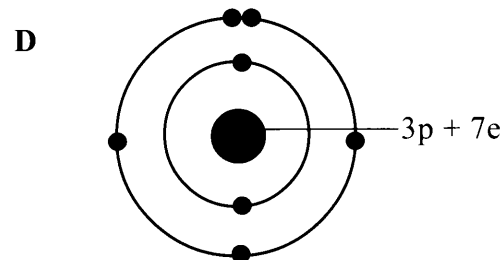
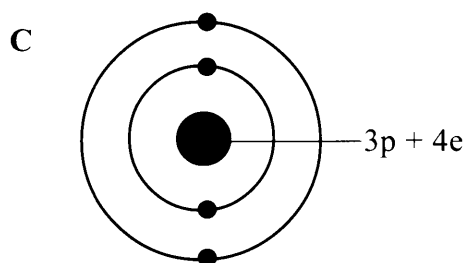
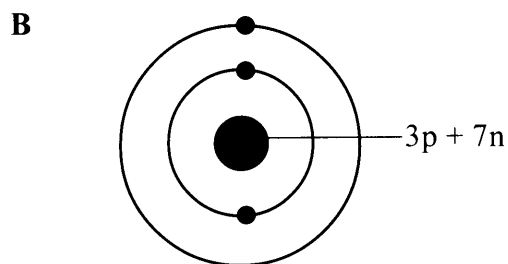
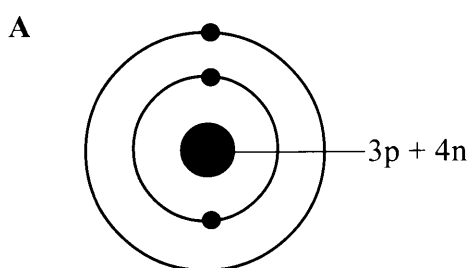
Maklumat berikut adalah mengenai atom T.

* Number of protons is 3
Bilangan proton ialah 3

* Nucleon number is 7
Nombor nukleon ialah 7

Which diagram shows the structure of atom T?

Rajah yang manakah menunjukkan struktur bagi atom T?



23 Compound X conducts electricity in aqueous solution or molten state. It also has a high melting point and boiling point.

What is X?

Sebatian X mengkonduksi elektrik dalam larutan akueus atau keadaan lebur. Ia juga mempunyai takat lebur dan takat didih yang tinggi.

Apakah X?

- A CCl_4
- B MgCl_2
- C CO_2
- D NH_3

24 Diagram 3 shows four chemical cells.

Rajah 3 menunjukkan empat sel kimia.

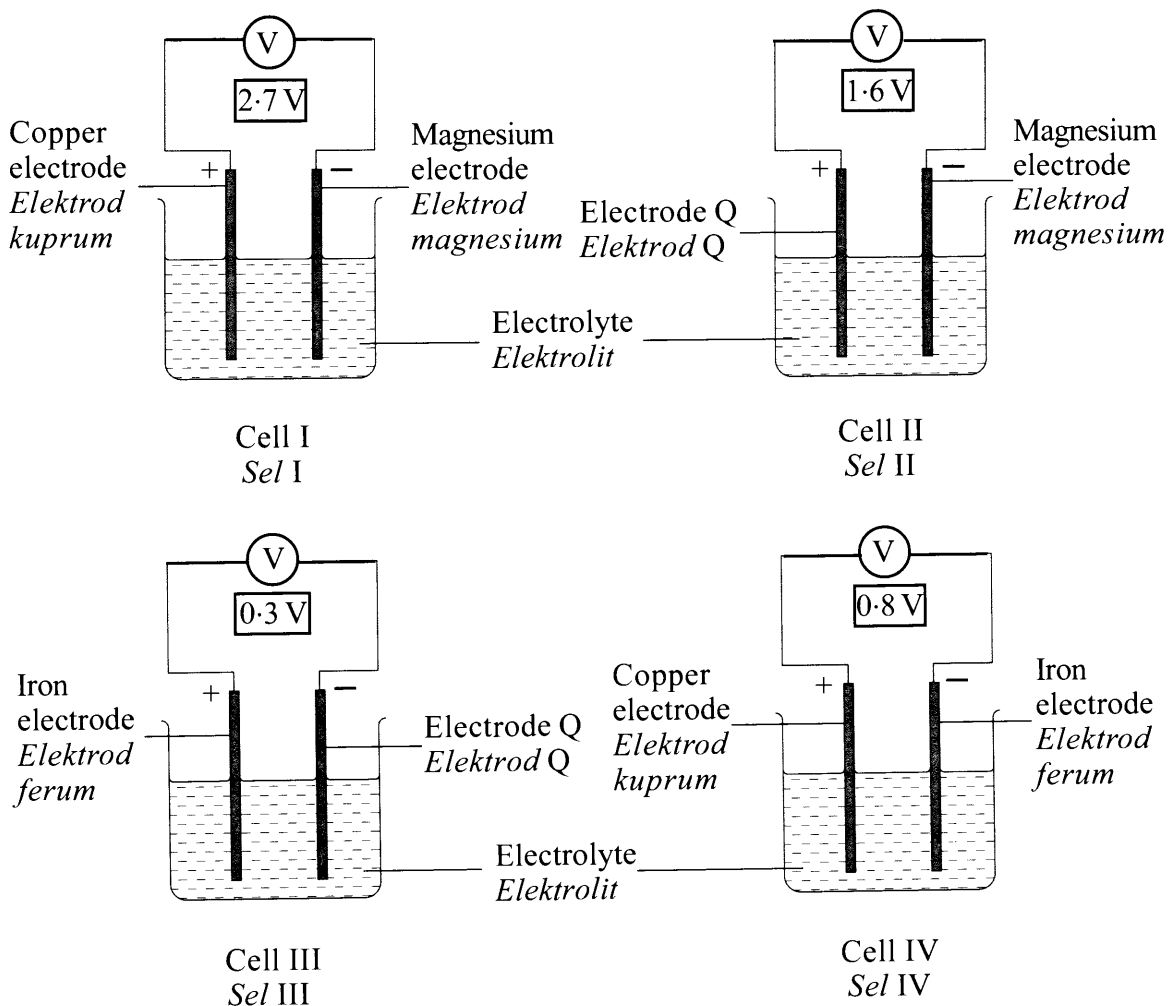


Diagram 3
Rajah 3

What is the arrangement of metals Q, copper, iron and magnesium in descending order of the electrochemical series?

Apakah susunan logam Q, kuprum, ferum dan magnesium mengikut tertib menurun dalam siri elektrokimia?

- A Q, magnesium, iron, copper
Q, magnesium, ferum, kuprum
- B Magnesium, Q, iron, copper
Magnesium, Q, ferum, kuprum
- C Magnesium, iron, Q, copper
Magnesium, ferum, Q, kuprum
- D Magnesium, iron, copper, Q
Magnesium, ferum, kuprum, Q

[Lihat halaman sebelah
SULIT

- 25 Table 1 shows the pH value when a certain volume of 1.0 mol dm^{-3} hydrochloric acid is added to 25 cm^3 of 1.0 mol dm^{-3} sodium hydroxide solution.

Jadual 1 menunjukkan nilai pH apabila suatu isi padu tertentu asid hidroklorik 1.0 mol dm^{-3} ditambah kepada 25 cm^3 larutan natrium hidroksida 1.0 mol dm^{-3} .

Volume of hydrochloric acid (cm^3) <i>Isi padu asid hidroklorik (cm^3)</i>	pH value <i>Nilai pH</i>
0	14
10	13
25	X
40	2

Table 1
Jadual 1

What is the value of X?

Apakah nilai X?

- A 12
- B 9
- C 7
- D 4

26 Diagram 4 shows a simple voltaic cell.

Rajah 4 menunjukkan satu sel volta ringkas.

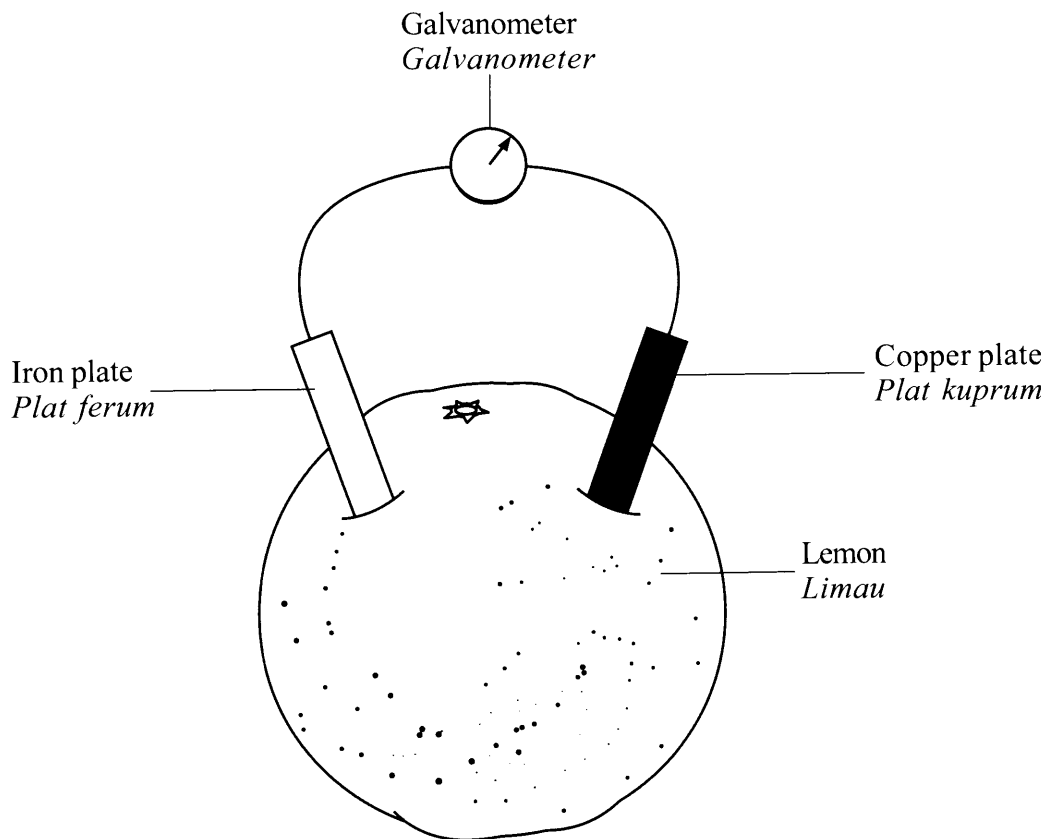


Diagram 4
Rajah 4

Why does the needle of the galvanometer deflect?

Mengapakah jarum galvanometer terpesong?

- A Lemon juice is an electrolyte
Jus limau adalah elektrolit
- B Iron is less electropositive than copper
Ferum kurang elektropositif daripada kuprum
- C Copper reacts with lemon juice
Kuprum bertindak balas dengan jus limau
- D Electrons moves from copper plate to iron plate
Elektron bergerak dari plat kuprum ke plat ferum

[Lihat halaman sebelah
SULIT

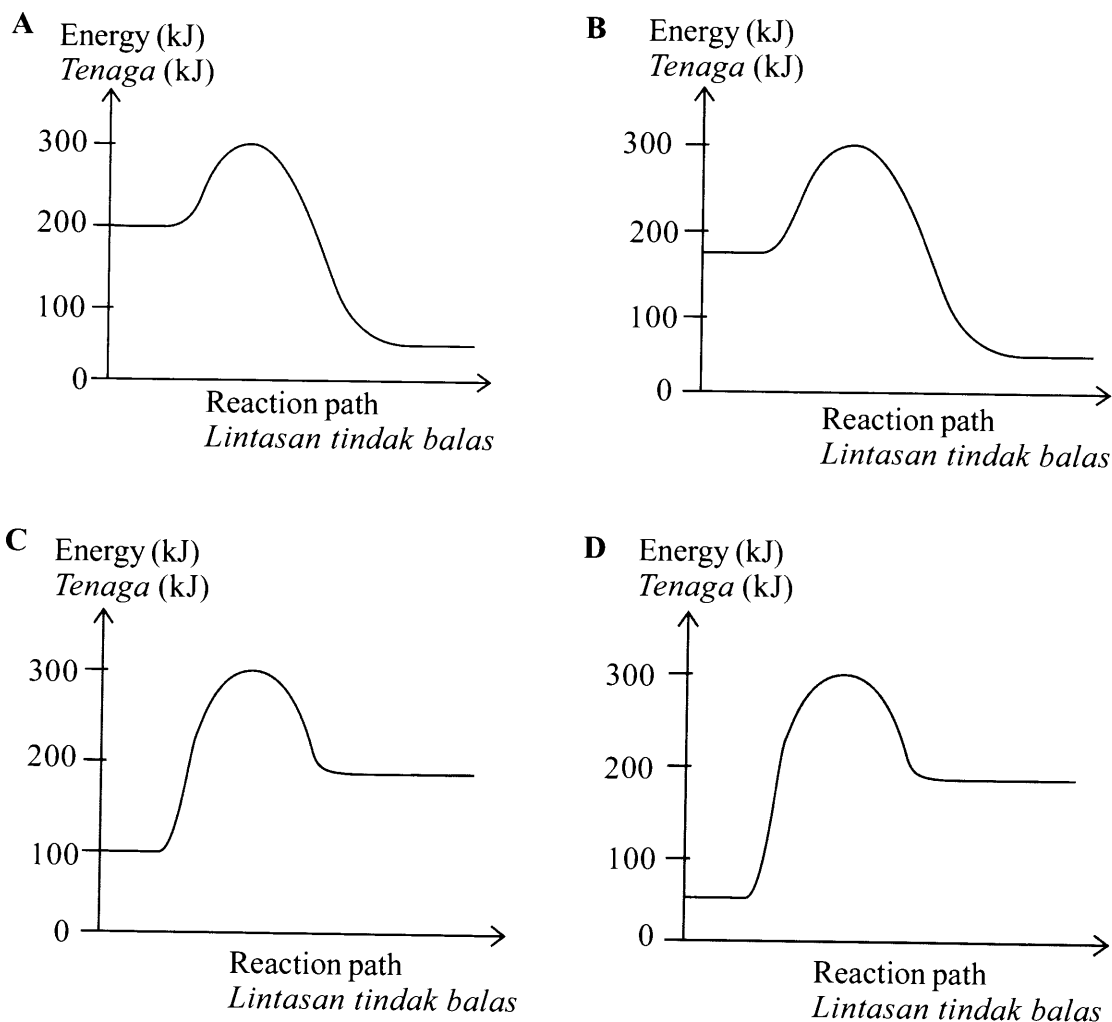
27 Which compound is an unsaturated hydrocarbon?

Sebatian manakah adalah hidrokarbon tak tepu?

- A $\text{CH}_3\text{CHCH}_3\text{CH}_3$
 B $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$
 C $\text{CH}_2\text{CHCH}_2\text{CH}_2\text{CH}_3$
 D $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$

28 Which energy profile diagram shows the lowest activation energy?

Rajah profil tenaga manakah yang menunjukkan tenaga pengaktifan paling rendah?



- 29 Diagram 5 shows the apparatus set-up to study the transfer reaction of electron at a distance.

Rajah 5 menunjukkan susunan radas untuk mengkaji tindak balas pemindahan elektron pada suatu jarak.

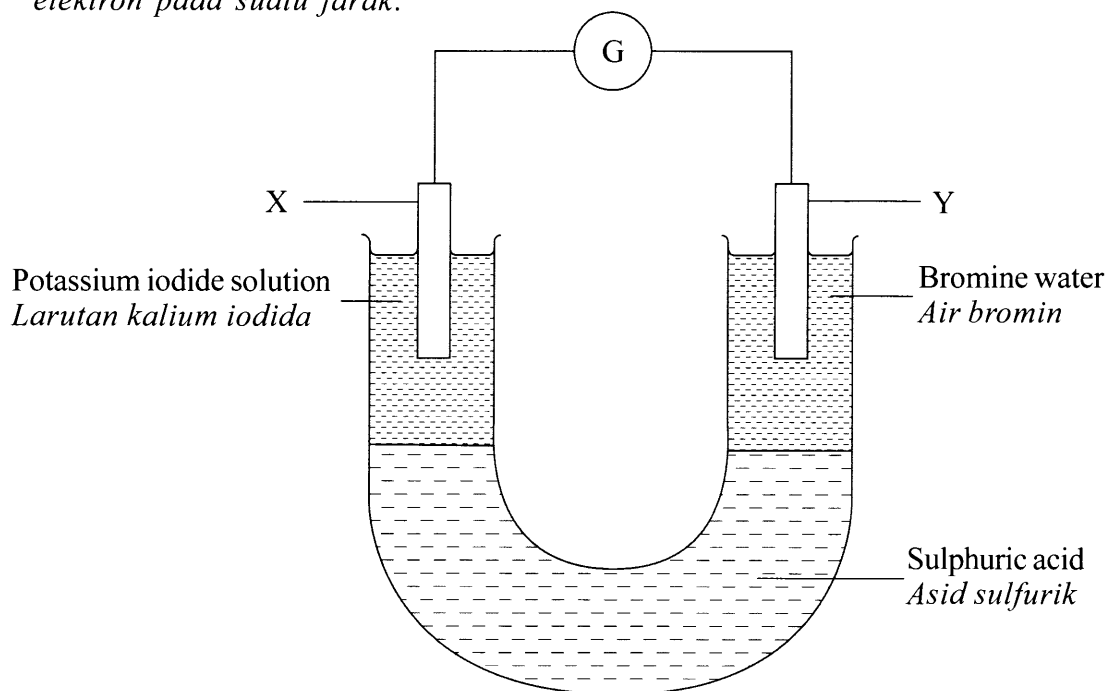


Diagram 5
Rajah 5

Which of the following occur at X and Y?

Antara yang berikut, yang manakah berlaku di X dan Y?

	X	Y
A	Oxidation number of iodine changes from 0 to +2 <i>Nombor pengoksidaan iodin berubah dari 0 ke +2</i>	Oxidation number of bromine changes from -1 to 0 <i>Nombor pengoksidaan bromin berubah dari -1 ke 0</i>
B	Brown solution turns colourless <i>Larutan perang menjadi tidak berwarna</i>	No change in colour <i>Tiada perubahan warna</i>
C	Iodide ion is oxidised <i>Ion iodida dioksidakan</i>	Bromine is reduced <i>Bromin diturunkan</i>
D	Mass of X increases <i>Jisim X bertambah</i>	Mass of Y decreases <i>Jisim Y berkurang</i>

[Lihat halaman sebelah
SULIT

30 Diagram 6 shows a structure of a polymer.

Rajah 6 menunjukkan struktur bagi suatu polimer.

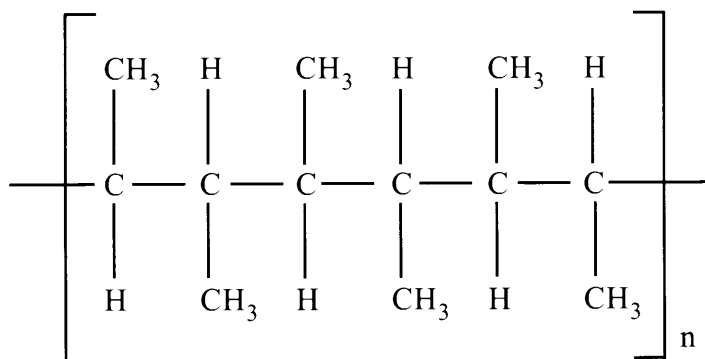
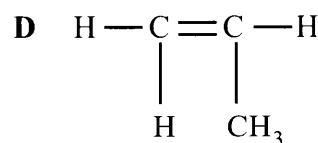
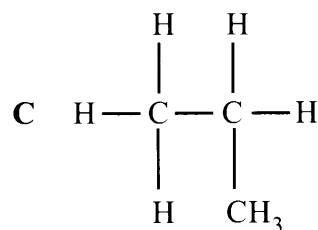
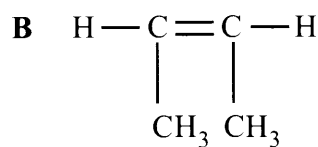
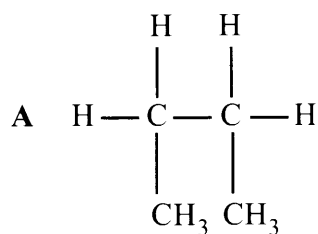


Diagram 6
Rajah 6

Which structural formula is a monomer for this polymer?

Formula struktur manakah merupakan monomer bagi polimer ini?



- 31 An oxide of element X dissolves in water to form a solution.
Phenolphthalein indicator turns from colourless to pink when it is dropped into the solution.

What is X?

*Suatu oksida unsur X larut dalam air untuk menghasilkan suatu larutan.
Penunjuk fenolftalein bertukar daripada tidak berwarna menjadi merah jambu apabila ia dititiskan ke dalam larutan itu.*

Apakah X?

- A Carbon
Karbon
- B Sulphur
Sulfur
- C Sodium
Natrium
- D Copper
Kuprum

- 32 Diagram 7 shows a graph to study the effect of total surface area on the rate of reaction.

Rajah 7 menunjukkan suatu graf bagi mengkaji kesan jumlah luas permukaan ke atas kadar tindak balas.

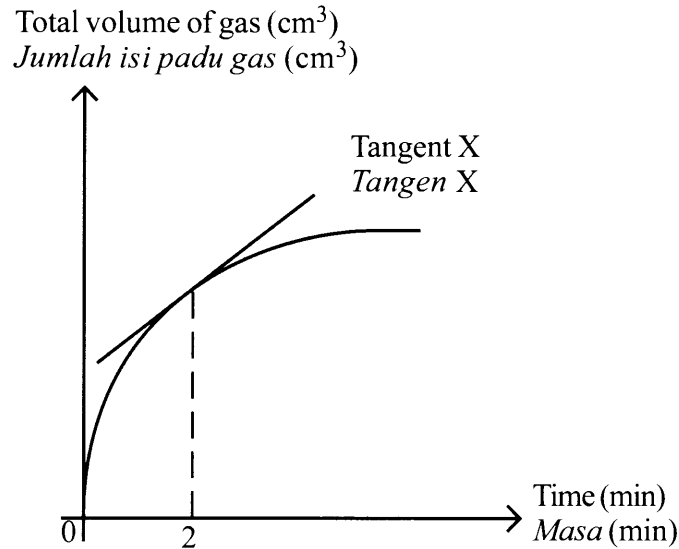


Diagram 7
Rajah 7

What is represented by gradient tangent X?

Apakah yang diwakili oleh kecerunan tangen X?

- A** Average rate of reaction in the first 2 minutes
Kadar tindak balas purata dalam 2 minit pertama
- B** Average rate of reaction in the 2nd minute
Kadar tindak balas purata pada minit ke-2
- C** Overall average rate of reaction
Kadar tindak balas purata keseluruhan
- D** Rate of reaction at the 2nd minute
Kadar tindak balas pada minit ke-2

33 Diagram 8 shows the method used to store an element.

Rajah 8 menunjukkan kaedah menyimpan satu unsur.

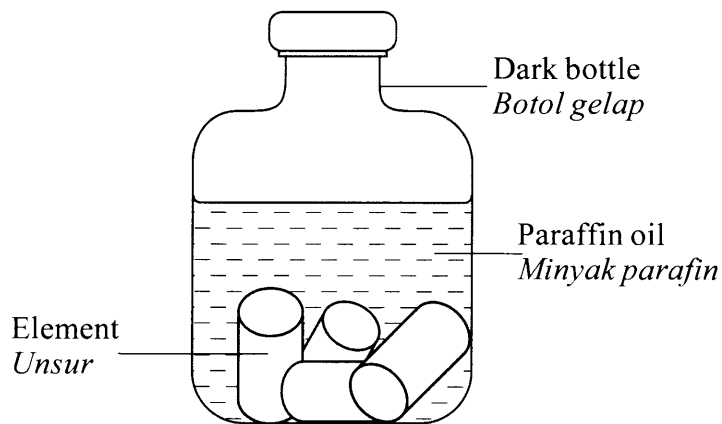


Diagram 8
Rajah 8

Which of the following explains why the method is used?

Antara yang berikut, yang manakah menerangkan mengapa kaedah ini digunakan?

- A** To avoid from reaction with sunlight
Untuk mengelakkan daripada tindak balas dengan cahaya matahari
- B** The element is toxic and dangerous
Unsur itu adalah toksik dan berbahaya
- C** The element is reactive and volatile
Unsur itu adalah reaktif dan mudah meruap
- D** To avoid from reaction with oxygen in the air
Untuk mengelakkan daripada tindak balas dengan oksigen dalam udara

- 34 Diagram 9 shows a flow chart for a reaction of the oxide of an element in Period 3 of the Periodic Table.

Rajah 9 menunjukkan carta alir bagi tindak balas oksida suatu unsur dalam Kala 3 Jadual Berkala.

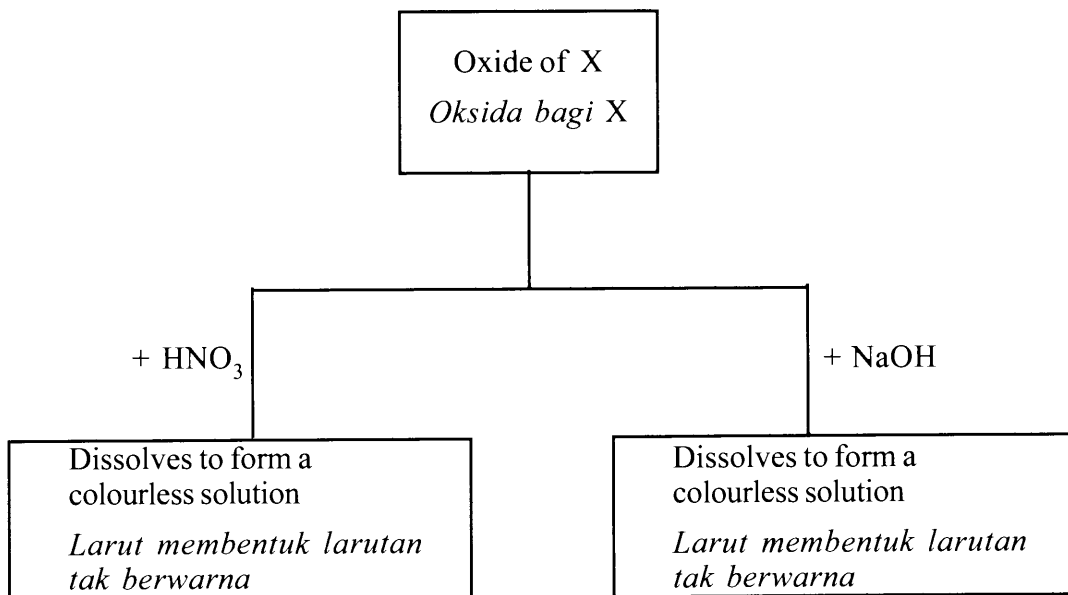


Diagram 9
Rajah 9

What is X?

Apakah X?

- A Sodium
Natrium
- B Sulphur
Sulfur
- C Magnesium
Magnesium
- D Aluminium
Aluminium

35 Table 2 shows the proton number of elements W, X, Y and Z.

Jadual 2 menunjukkan nombor proton bagi unsur-unsur W, X, Y dan Z.

Element <i>Unsur</i>	W	X	Y	Z
Proton number <i>Nombor proton</i>	3	6	11	12

Table 2
Jadual 2

Which arrangement shows the atomic size of the elements in ascending order?

Susunan manakah menunjukkan saiz atom unsur-unsur dalam tertib menaik?

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

36 Helium gas is used to fill weather balloons because of its inert property.

Which of the following is the best explanation of the property?

Gas helium digunakan untuk mengisi belon kaji cuaca kerana sifat lengainya.

Antara yang berikut, penerangan manakah yang paling baik mengenai sifat itu?

- A Has low density
Mempunyai ketumpatan yang rendah
- B Exists as monoatomic gas
Wujud sebagai gas monoatom
- C Achieved stable electron arrangement
Mencapai susunan elektron yang stabil
- D Placed in Group 18 in the Periodic Table
Berada dalam Kumpulan 18 dalam Jadual Berkala

37 A student found that an iron spoon rusts easily.

What is the suitable method to solve the problem?

Seorang pelajar mendapati sudu besi mudah berkarat.

Apakah kaedah yang sesuai untuk menyelesaikan masalah itu?

- A Dip into oil
Celup ke dalam minyak
- B Scrub with sand paper
Gosok dengan kertas pasir
- C Electroplate with silver
Sadur dengan argentum
- D Contact with copper metal
Sentuh dengan logam kuprum

38 A student wants to prepare hydrogen gas in the laboratory through the reaction between magnesium ribbon and hydrochloric acid.

Which steps must be taken to shorten the time to collect the gas?

Seorang pelajar ingin menyediakan gas hidrogen di dalam makmal melalui tindak balas antara pita magnesium dan asid hidroklorik.

Langkah-langkah manakah mesti diambil untuk memendekkan masa pengumpulan gas itu?

- I Adding water to hydrochloric acid
Menambahkan air kepada asid hidroklorik
 - II Using a larger conical flask for the solution
Menggunakan kelalang kon yang lebih besar untuk larutan tersebut
 - III Replacing magnesium ribbon with magnesium powder
Menggantikan pita magnesium dengan serbuk magnesium
 - IV Adding a few drops of copper(II) sulphate solution to the mixture of the reactants
Menambahkan beberapa titis larutan kuprum(II) sulfat kepada campuran bahan tindak balas
- A I and II
I dan II
 - B I and IV
I dan IV
 - C II and III
II dan III
 - D III and IV
III dan IV

- 39 Which substance has a different mass from 1 mol of glucose, $C_6H_{12}O_6$?
[Relative atomic mass: H = 1, C = 12, O = 16]
Bahan manakah mempunyai jisim yang berbeza daripada 1 mol glukosa, $C_6H_{12}O_6$?
[Jisim atom relatif: H = 1, C = 12, O = 16]
- A 1 mol of naphthalene, $C_{10}H_8$
1 mol *naftalena*, $C_{10}H_8$
- B 3 mol of propanol, C_3H_7OH
3 mol *propanol*, C_3H_7OH
- C 6 mol of ethane, C_2H_6
6 mol *etana*, C_2H_6
- D 10 mol of water, H_2O
10 mol *air*, H_2O
- 40 When 50.0 cm^3 of 0.5 mol dm^{-3} silver nitrate solution is added to 50.0 cm^3 of 0.5 mol dm^{-3} sodium chloride solution, temperature of the mixture rises $3.4 \text{ }^\circ\text{C}$.
What is the heat released in the experiment?
[Specific heat capacity of solution, $c = 4.2 \text{ J g}^{-1} \text{ }^\circ\text{C}^{-1}$; Density of solution = 1 g cm^{-3}]
Apabila 50.0 cm^3 larutan argentum nitrat 0.5 mol dm^{-3} dicampurkan kepada 50.0 cm^3 larutan natrium klorida 0.5 mol dm^{-3} , suhu campuran meningkat sebanyak $3.4 \text{ }^\circ\text{C}$.
Berapakah haba yang dibebaskan dalam eksperimen itu?
[Muatan haba tentu larutan, $c = 4.2 \text{ J g}^{-1} \text{ }^\circ\text{C}^{-1}$; Ketumpatan larutan: 1 g cm^{-3}]
- A 61.76 J
- B 714 J
- C 1 428 J
- D 2 856 J
- 41 What is the mass of sodium chloride obtained when 50.0 cm^3 of 1.0 mol dm^{-3} sodium hydroxide reacts with 50.0 cm^3 of 1.0 mol dm^{-3} hydrochloric acid?
[Relative atomic mass: Na = 23, Cl = 35.5]
Berapakah jisim natrium klorida yang diperoleh apabila 50.0 cm^3 natrium hidroksida 1.0 mol dm^{-3} bertindak balas dengan 50.0 cm^3 asid hidroklorik 1.0 mol dm^{-3} ?
[Jisim atom relatif: Na = 23, Cl = 35.5]
- A 0.025 g
- B 0.050 g
- C 1.463 g
- D 2.925 g

[Lihat halaman sebelah
SULIT

- 42 Table 3 shows the volume of carbon dioxide gas collected in an experiment.

Jadual 3 menunjukkan isi padu gas karbon dioksida terkumpul dalam satu eksperimen.

Time (s) Masa (s)	0	30	60	90	120	150	180	210	240	270
Volume of carbon dioxide gas (cm³) Isi padu gas karbon dioksida (cm³)	0.0	20.0	30.0	31.0	32.0	32.5	33.0	33.0	33.0	33.0

Table 3
Jadual 3

What is the average rate of reaction?

Berapakah kadar tindak balas purata?

- A 0.12 cm³ s⁻¹
 B 0.18 cm³ s⁻¹
 C 0.22 cm³ s⁻¹
 D 0.37 cm³ s⁻¹
- 43 The reaction between barium chloride solution and lead(II) nitrate solution produces lead(II) chloride and barium nitrate.

Which ionic equation represents the reaction?

Tindak balas antara larutan barium klorida dan larutan plumbum(II) nitrat menghasilkan plumbum(II) klorida dan barium nitrat.

Persamaan ion yang manakah mewakili tindak balas itu?

- A $\text{Pb}^{2+} + \text{NO}_3^- \longrightarrow \text{Pb}(\text{NO}_3)_2$
 B $\text{Pb}^{2+} + 2\text{Cl}^- \longrightarrow \text{PbCl}_2$
 C $\text{Ba}^{2+} + 2\text{Cl}^- \longrightarrow \text{BaCl}_2$
 D $\text{Ba}^{2+} + 2\text{NO}_3^- \longrightarrow \text{Ba}(\text{NO}_3)_2$

44 What is the mass of oxygen in 88 g of carbon dioxide?

[Relative atomic mass: C = 12, O = 16]

Berapakah jisim oksigen dalam 88 g karbon dioksida?

[*Jisim atom relatif: C = 12, O = 16*]

A 16 g

B 32 g

C 50 g

D 64 g

45 Alcohol undergoes dehydration reaction to form alkenes and water.

Which alkene is formed when butan-1-ol undergoes dehydration reaction?

Alkohol mengalami tindak balas pendehidratan untuk membentuk alkena dan air.

Alkena manakah yang terbentuk apabila butan-1-ol mengalami tindak balas pendehidratan?

A $\text{CH}_3\text{CH}_2\text{CH} = \text{CH}_2$

B $\text{CH}_3\text{CH} = \text{CHCH}_3$

C $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3\text{C} = \text{CH}_2 \end{array}$

D $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_2 = \text{C} - \text{CH}_3 \end{array}$

- 46 Table 4 shows the observations when a series of tests are conducted to verify the anion and cation in a compound X.

Jadual 4 menunjukkan pemerhatian apabila satu siri ujian dijalankan bagi mengesahkan anion dan kation dalam sebatian X.

Test Ujian	Observation Pemerhatian
Add a few drops of ammonia solution until excess to solution of X <i>Tambah beberapa titik larutan ammonia sehingga berlebihan kepada larutan X</i>	White precipitate is formed and it is soluble in excess ammonia solution <i>Mendakan putih terbentuk dan larut dalam larutan ammonia berlebihan</i>
Add solution of X to silver nitrate solution <i>Tambah larutan X kepada larutan argentum nitrat</i>	White precipitate is formed <i>Mendakan putih terbentuk</i>

Table 4
Jadual 4

What are the anion and cation present in compound X?

Apakah anion dan kation yang hadir dalam sebatian X?

	Anion Anion	Cation Kation
A	Chloride <i>Klorida</i>	Lead <i>Plumbum</i>
B	Chloride <i>Klorida</i>	Zinc <i>Zink</i>
C	Sulphate <i>Sulfat</i>	Zinc <i>Zink</i>
D	Sulphate <i>Sulfat</i>	Lead <i>Plumbum</i>

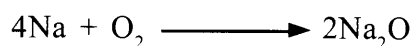
47 Which solution contains the greatest number of hydrogen ions?

Larutan manakah mengandungi paling banyak ion hidrogen?

- A 0.3 dm³ of 2.0 mol dm⁻³ sulphuric acid
0.3 dm³ *asid sulfurik* 2.0 mol dm⁻³
- B 0.4 dm³ of 2.0 mol dm⁻³ nitric acid
0.4 dm³ *asid nitrik* 2.0 mol dm⁻³
- C 0.5 dm³ of 2.0 mol dm⁻³ hydrochloric acid
0.5 dm³ *asid hidroklorik* 2.0 mol dm⁻³
- D 0.6 dm³ of 2.0 mol dm⁻³ ethanoic acid
0.6 dm³ *asid etanoik* 2.0 mol dm⁻³

48 The following equation represents the reaction between sodium and oxygen.

Persamaan berikut mewakili tindak balas antara natrium dan oksigen.



What is the maximum mass of sodium oxide formed when 11.5 g of sodium is heated completely in oxygen?

[Relative atomic mass: Na = 23, O = 16]

Berapakah jisim maksimum natrium oksida yang terbentuk apabila 11.5 g natrium dipanaskan dengan lengkap dalam oksigen?

[Jisim atom relatif: Na = 23, O = 16]

- A 15.5 g
- B 19.5 g
- C 31.0 g
- D 62.0 g

- 49 The following equation represents the oxidation reaction between ethanol and acidified potassium dichromate(VI).

Persamaan berikut mewakili tindak balas pengoksidaan antara etanol dan kalium dikromat(VI) berasid.



What is the change in the oxidation number of chromium?

Apakah perubahan nombor pengoksidaan bagi kromium?

- A** +2 to +6
+2 kepada +6
- B** +3 to +6
+3 kepada +6
- C** +6 to +2
+6 kepada +2
- D** +6 to +3
+6 kepada +3

50 Diagram 10 shows a simple voltaic cell.

Rajah 10 menunjukkan satu sel volta ringkas.

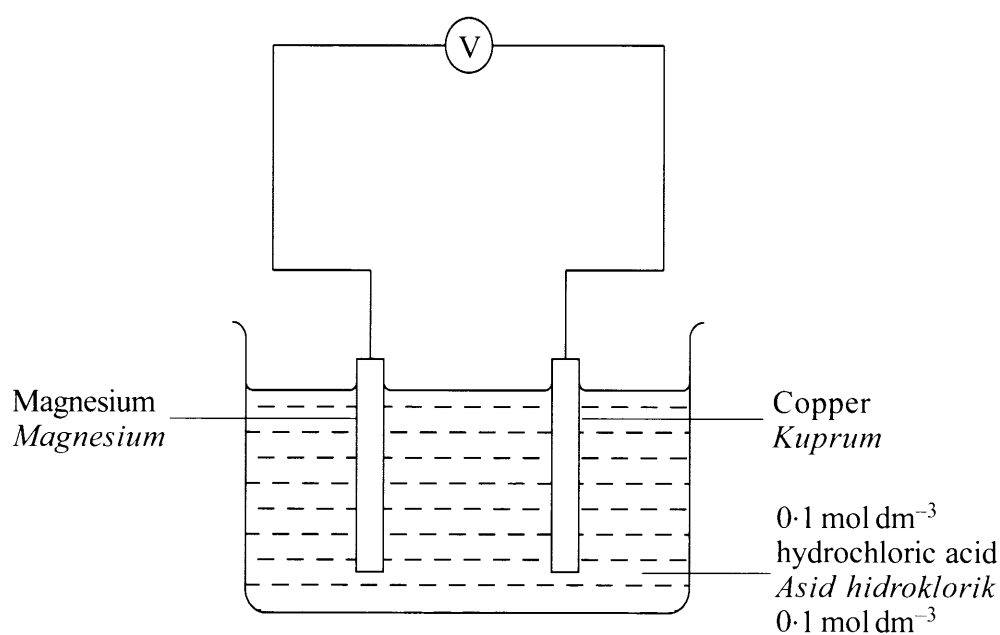


Diagram 10
Rajah 10

Which half equation represents the reaction at the positive terminal of the voltaic cell?

Setengah persamaan manakah mewakili tindak balas di terminal positif sel volta?

- A $2\text{Cl}^- \longrightarrow \text{Cl}_2 + 2\text{e}^-$
- B $\text{Cu}^{2+} + 2\text{e}^- \longrightarrow \text{Cu}$
- C $2\text{H}^+ + 2\text{e}^- \longrightarrow \text{H}_2$
- D $\text{Mg} \longrightarrow \text{Mg}^{2+} + 2\text{e}^-$

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 baharu.
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.