



JABATAN PELAJARAN NEGERI SELANGOR
PERSIDANGAN KEBANGSAAN PENGETUA SEKOLAH MENENGAH



PROGRAM PENINGKATAN PRESTASI AKADEMIK (2)
SIJIL PELAJARAN MALAYSIA 2010

4541/1

CHEMISTRY

Kertas 1

Sept./Okt.

1¼ 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.

- 1 Diagram 1 shows the symbol of beryllium atom.
Rajah 1 menunjukkan simbol bagi atom berilium.

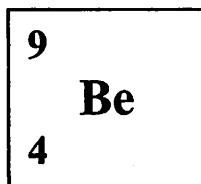


Diagram 1
Rajah 1

Which of the following is true about beryllium atom?

Antara yang berikut, yang manakah benar tentang atom berilium?

	Proton <i>Proton</i>	Electron <i>Elektron</i>	Neutron <i>Neutron</i>
A	4	5	4
B	4	4	5
C	4	4	9
D	11	5	9

- 2 Which of the following statements is true for one mole of substance?
Antara pernyataan yang berikut, yang manakah benar bagi satu mol bahan?

- A 1 mol of magnesium contains 6×10^{23} molecules
1 mol magnesium mengandungi 6×10^{23} molekul
- B 1 mol of hydrogen gas contains 6×10^{23} atoms
1 mol gas hidrogen mengandungi 6×10^{23} atom
- C 1 mol of water contains the same number of atoms as in 12 g of carbon-12
1 mol air mengandungi bilangan atom yang sama dengan bilangan atom dalam 12 g karbon-12
- D 1 mol of sulphur dioxide contains the same number of molecules as the number of atoms in 12 g carbon-12
1 mol sulfur dioksida mengandungi bilangan molekul yang sama dengan bilangan atom dalam 12 g karbon-12

- 3 Which of the following is true about the arrangement of the elements in the Periodic Table?
Antara yang berikut, yang manakah benar tentang penyusunan unsur-unsur di dalam Jadual Berkala?
- A Increasing number of neutrons
Peningkatan bilangan neutron
 - B Increasing number of electrons
Peningkatan bilangan elektron
 - C Increasing proton number
Peningkatan nombor proton
 - D Increasing nucleon number
Peningkatan nombor nukleon
- 4 X is an ionic compound which dissolves in water to form a solution that conducts electricity.
X ialah sebatian ionik yang larut dalam air menghasilkan larutan yang boleh mengkonduksikan arus elektrik.
- Which of the following is compound X?
Antara yang berikut, yang manakah sebatian X?
- A Sodium chloride
Natrium klorida
 - B Hydrogen chloride
Hidrogen klorida
 - C Methylbenzene
Metilbenzena
 - D Silver chloride
Argentum klorida

- 5 Diagram 2 shows a chemical cell.
Rajah 2 menunjukkan satu sel kimia.

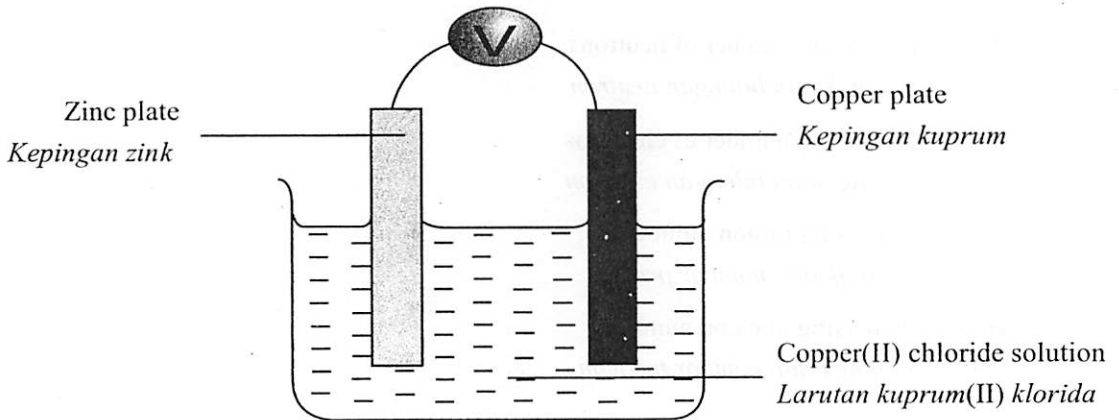


Diagram 2
Rajah 2

What is the energy conversion that takes place in the cell?
Apakah perubahan tenaga yang berlaku dalam sel tersebut?

- A Electrical energy → heat energy
Tenaga elektrik → tenaga haba
- B Chemical energy → heat energy
Tenaga kimia → tenaga haba
- C Electrical energy → chemical energy
Tenaga elektrik → tenaga kimia
- D Chemical energy → electrical energy
Tenaga kimia → tenaga elektrik

- 6 The following statement relates the concentration and pH value of an alkali.

Pernyataan berikut mengaitkan hubungan di antara kepekatan dan nilai pH bagi suatu alkali.

The pH value of 0.1 mol dm^{-3} of sodium hydroxide solution is higher than the pH value of 0.1 mol dm^{-3} of aqueous ammonia.

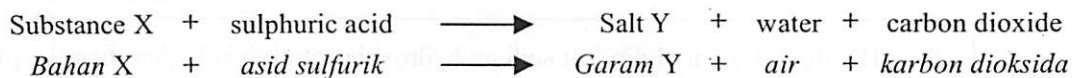
Nilai pH bagi 0.1 mol dm^{-3} larutan natrium hidroksida adalah lebih tinggi berbanding nilai pH bagi 0.1 mol dm^{-3} ammonia akues.

Which of the following explains the statement above?

Antara yang berikut, yang manakah menerangkan pernyataan di atas?

- A** The concentration of hydroxide ions in sodium hydroxide solution is higher than the concentration of hydroxide ions in aqueous ammonia
Kepekatan ion hidroksida dalam larutan natrium hidroksida adalah lebih tinggi berbanding kepekatan ion hidroksida dalam ammonia akues
- B** Sodium hydroxide solution ionises partially in water whereas aqueous ammonia ionises completely in water
Larutan natrium hidroksida mengion separa lengkap dalam air manakala ammonia akues mengion lengkap dalam air
- C** The concentration of hydrogen ions in sodium hydroxide solution is less than the concentration of hydrogen ions in aqueous ammonia
Kepekatan ion hidrogen dalam larutan natrium hidroksida lebih rendah berbanding kepekatan ion hidrogen dalam ammonia akues
- D** Sodium hydroxide solution is more soluble in water than aqueous ammonia
Larutan natrium hidroksida lebih larut dalam air berbanding ammonia akues

- 7 The following equation shows a chemical reaction.
Persamaan berikut menunjukkan satu tindak balas kimia.



What is substance X?

Apakah bahan X?

- A Copper(II) oxide
Kuprum(II) oksida
- B Sodium hydroxide
Natrium hidroksida
- C Magnesium metal
Logam magnesium
- D Zinc carbonate
Zink karbonat
- 8 Diagram 3 shows the body of the bullet train which is made of an alloy X.
Rajah 3 menunjukkan badan kereta api laju yang diperbuat daripada aloi X.



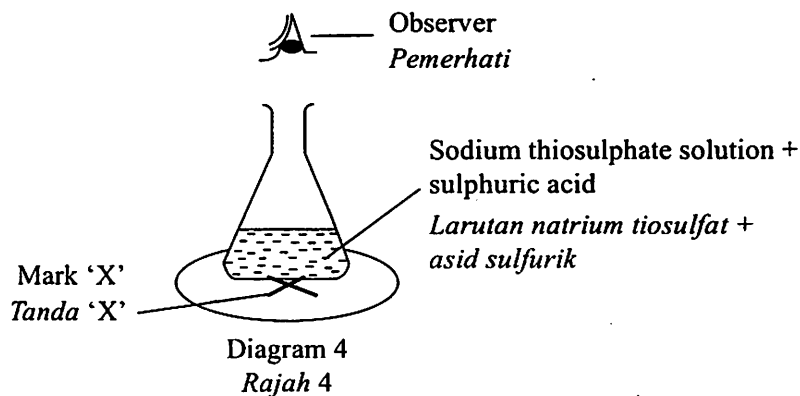
Diagram 3
Rajah 3

What is alloy X?

Apakah aloi X?

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

- 9 Diagram 4 shows the set-up of apparatus to investigate the factor that affects the rate of reaction.
Rajah 4 menunjukkan susunan radas untuk mengkaji suatu faktor yang mempengaruhi kadar tindak balas.



Which of the following methods will increase the rate of reaction?

Antara kaedah yang berikut, yang manakah akan meningkatkan kadar tindak balas?

- A Adding distilled water to the reaction mixture
Mencampurkan air suling kepada campuran tindak balas
- B Replacing sulphuric acid with hydrochloric acid
Menggantikan asid sulfurik dengan asid hidroklorik
- C Using a higher volume of sulphuric acid
Menggunakan isi padu asid sulfurik yang lebih tinggi
- D Using a higher concentration of sodium thiosulphate solution
Meningkatkan kepekatan larutan natrium tiosulfat

- 10 Which of the following is the structural formula of a carboxylic acid?

Antara yang berikut, yang manakah formula struktur bagi asid karboksilik?

- A
$$\begin{array}{c} \text{O} \\ \parallel \\ \text{H} - \text{C} - \text{O} - \text{CH}_3 \end{array}$$
- B
$$\begin{array}{c} \text{O} \\ \parallel \\ \text{CH}_3 - \text{C} - \text{O} - \text{H} \end{array}$$
- C
$$\text{CH}_3 - \text{O} - \text{H}$$
- D
$$\begin{array}{c} \text{O} \\ \parallel \\ \text{CH}_3 - \text{C} - \text{O} - \text{CH}_3 \end{array}$$

11 Which of the following is a reducing agent?

Antara yang berikut, yang manakah merupakan agen penurunan?

A Acidified potassium manganate(VII) solution

Larutan kalium manganat(VII) berasid

B Iron(III) chloride solution

Larutan ferum(III) klorida

C Bromine water

Air bromin

D Zinc powder

Serbuk zink

12 Lecithin is added to food like chocolate.

Lesitin ditambah ke dalam makanan seperti coklat.

Which of the following is the main function of lecithin?

Antara yang berikut, yang manakah fungsi utama lesitin?

A Improves the texture of chocolate

Memperbaiki tekstur coklat

B Gives chocolate a better taste

Menjadikan coklat lebih sedap

C Prevents or slows down the growth of bacteria or fungi

Mencegah atau melambatkan pertumbuhan bakteria atau kulat

D Slows down the oxidation of fat in chocolate

Melambatkan pengoksidaan lemak dalam coklat

- 13 Diagram 5 shows an energy level diagram for a chemical reaction.
Rajah 5 menunjukkan satu rajah aras tenaga bagi suatu tindak balas kimia.

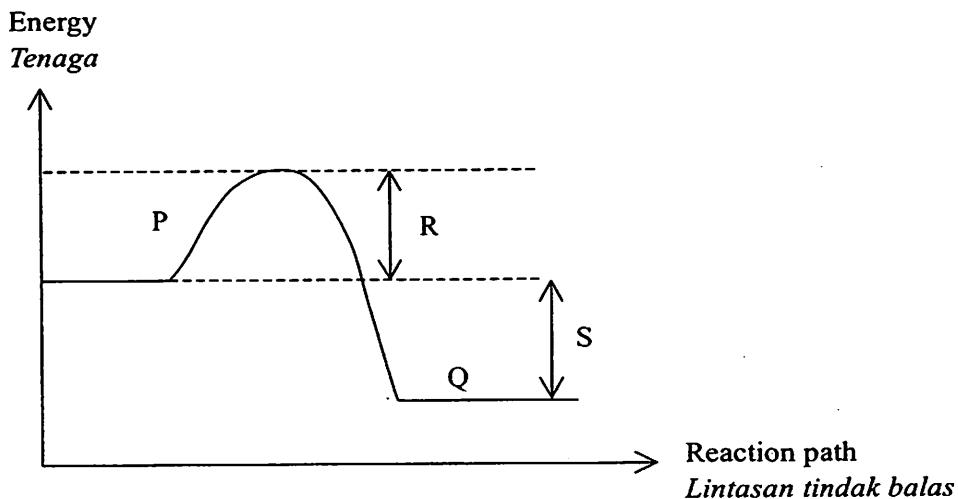


Diagram 5
Rajah 5

Which of the following represents P, Q, R and S?
Antara yang berikut, yang manakah mewakili P, Q, R dan S?

	P	Q	R	S
A	Product <i>Hasil tindak balas</i>	Reactant <i>Bahan tindak balas</i>	Activation energy <i>Tenaga pengaktifan</i>	Heat of reaction <i>Haba tindak balas</i>
B	Product <i>Hasil tindak balas</i>	Reactant <i>Bahan tindak balas</i>	Heat of reaction <i>Haba tindak balas</i>	Activation energy <i>Tenaga pengaktifan</i>
C	Reactant <i>Bahan tindak balas</i>	Product <i>Hasil tindak balas</i>	Activation energy <i>Tenaga pengaktifan</i>	Heat of reaction <i>Haba tindak balas</i>
D	Reactant <i>Bahan tindak balas</i>	Product <i>Hasil tindak balas</i>	Heat of reaction <i>Haba tindak balas</i>	Activation energy <i>Tenaga pengaktifan</i>

- 14 Diagram 6 shows the electron arrangement of atom Y.
Rajah 6 menunjukkan susunan elektron bagi satu atom Y.

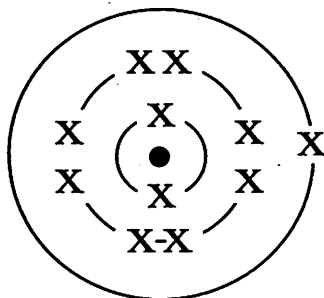


Diagram 6
Rajah 6

The number of neutrons of atom Y is 12.
What is the nucleon number for atom Y?
Bilangan neutron bagi atom Y ialah 12.
Apakah nombor nukleon bagi atom Y?

- A 11
B 12
C 23
D 34
- 15 The molar mass of chromium is 52 g mol^{-1} .
What is the relative atomic mass of chromium?
Jisim molar bagi kromium ialah 52 g mol^{-1} .
Apakah jisim atom relatif bagi kromium?

- A 26
B 52
C 104
D 156

- 16** Diagram 7 shows the position of element E in the Periodic Table. E is not the actual symbol of the element.
Rajah 7 menunjukkan kedudukan unsur E di dalam Jadual Berkala. E bukan simbol sebenar bagi unsur itu.



Diagram 7
Rajah 7

Which of the following is **not** true about the characteristics of element E?
*Antara yang berikut, yang manakah **tidak** benar mengenai ciri-ciri unsur E?*

- A** Can form complex ions
Boleh membentuk ion kompleks
- B** Low melting and boiling points
Takat lebur dan takat didih yang rendah
- C** Can form coloured compounds
Boleh membentuk sebatian berwarna
- D** Can be used as catalyst
Boleh digunakan sebagai mangkin

- 17 Which of the following is **not** true about of covalent compounds?
*Antara yang berikut, yang manakah **tidak** benar mengenai sifat sebatian kovalen?*

- A** Volatile
Meruap
- B** Soluble in organic solvents
Larut dalam pelarut organik
- C** Formed by the sharing of electrons between atoms
Terbentuk melalui perkongsian elektron antara atom-atom
- D** Conduct electricity in the molten state
Mengkonduksi arus elektrik dalam keadaan leburan

- 18 Diagram 8 shows the electrolysis of copper(II) sulphate solution.

Rajah 8 menunjukkan elektrolisis bagi larutan kuprum(II) sulfat.

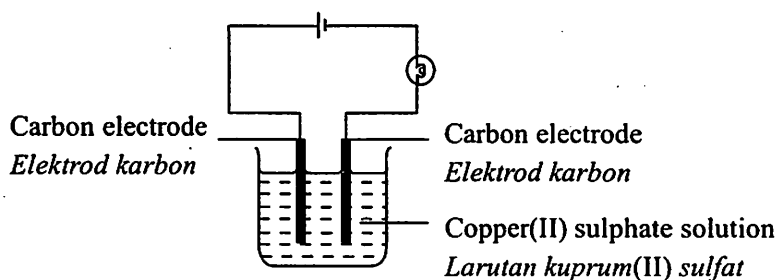


Diagram 8
Rajah 8

Which of the following ions are attracted to anode and cathode?

Antara ion-ion yang berikut, yang manakah tertarik ke anod dan ke katod?

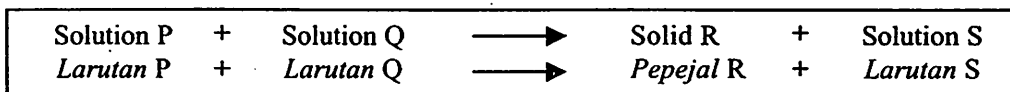
	Anode <i>Anod</i>	Cathode <i>Katod</i>
A	SO_4^{2-}	Cu^{2+}
B	Cu^{2+}	OH^-
C	$\text{SO}_4^{2-}, \text{OH}^-$	$\text{Cu}^{2+}, \text{H}^+$
D	$\text{Cu}^{2+}, \text{H}^+$	$\text{SO}_4^{2-}, \text{OH}^-$

- 19 What are the products of the reaction between hydrochloric acid and zinc carbonate?

Apakah hasil-hasil bagi tindak balas antara asid hidroklorik dan zink karbonat?

- I Water
Air
 - II Zinc chloride
Zink klorida
 - III Carbon dioxide
Karbon dioksida
 - IV Zinc
Zink
- 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

- 20 The following equation shows a chemical reaction during the preparation of salt R.
Persamaan berikut menunjukkan tindak balas kimia semasa penyediaan garam R.



Which of the following set is compound P, Q, R and S?

Antara set yang berikut, yang manakah merupakan sebatian P, Q, R dan S?

	P	Q	R	S
I	KOH	H ₂ SO ₄	H ₂ SO ₄	H ₂ O
II	Ca(NO ₃) ₃	K ₂ SO ₄	CaSO ₄	KNO ₃
III	AgNO ₃	NaCl	AgCl	NaNO ₃
IV	NH ₄ OH	HCl	NH ₄ Cl	H ₂ O

- A III only
 III sahaja
- B II and III only
 II dan III sahaja
- C II and IV only
 II dan IV sahaja
- D I, II and IV only
 I, II dan IV sahaja
- 21 Diagram 9 shows the structural formulae of a polymer.
Rajah 9 menunjukkan formula struktur bagi suatu polimer.

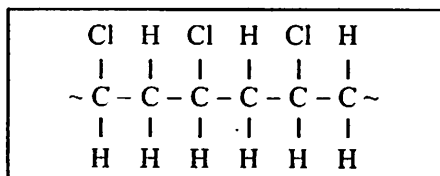


Diagram 9

Rajah 9

Which of the following formula is the monomer for this polymer?

Antara formula yang berikut, yang manakah adalah monomer bagi polimer tersebut?

- A C₆H₉Cl₃
- B C₂H₃Cl
- C C₂H₅Cl
- D C₃H₄Cl₂

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 SULIT

- 22 Ion X^{2+} has 20 neutrons and the electron arrangement is 2.8.8.
What is the nucleon number of element X?
*Ion X^{2+} mempunyai 20 neutron dan susunan elektron 2.8.8.
Apakah nombor nukleon unsur X?*

- A 20
- B 18
- C 40
- D 38

- 23 Diagram 10 shows a graph of volume of hydrogen gas released against time for the reaction between zinc granules and dilute hydrochloric acid.
Rajah 10 menunjukkan graf isi padu gas hidrogen yang terbebas melawan masa bagi tindak balas antara ketulan zink dan asid hidroklorik cair.

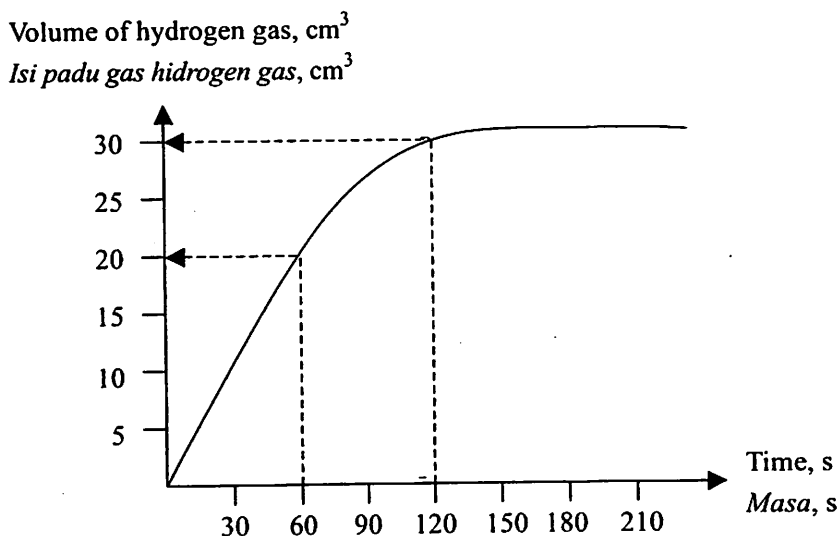


Diagram 10
Rajah 10

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

- A $0.167 \text{ cm}^3 \text{ s}^{-1}$
- B $0.250 \text{ cm}^3 \text{ s}^{-1}$
- C $0.333 \text{ cm}^3 \text{ s}^{-1}$
- D $0.512 \text{ cm}^3 \text{ s}^{-1}$

- 24 The formula for carbonate and nitrate ions are CO_3^{2-} and NO_3^- respectively.
 If the formula of the carbonate salt of P is PCO_3 , what is the formula of the nitrate salt of P?
*Formula bagi ion karbonat dan ion nitrat ialah CO_3^{2-} dan NO_3^- masing-masing.
 Jika formula bagi garam karbonat ialah PCO_3 , apakah formula bagi garam nitrat P?*

- A PNO_3
 B P_2NO_3
 C $\text{P}(\text{NO}_3)_2$
 D $\text{P}(\text{NO}_3)_3$

- 25 Diagram 11 shows the apparatus set-up for the dehydration reaction of propanol.
Rajah 11 menunjukkan susunan radas bagi tindak balas pendehidratan propanol.

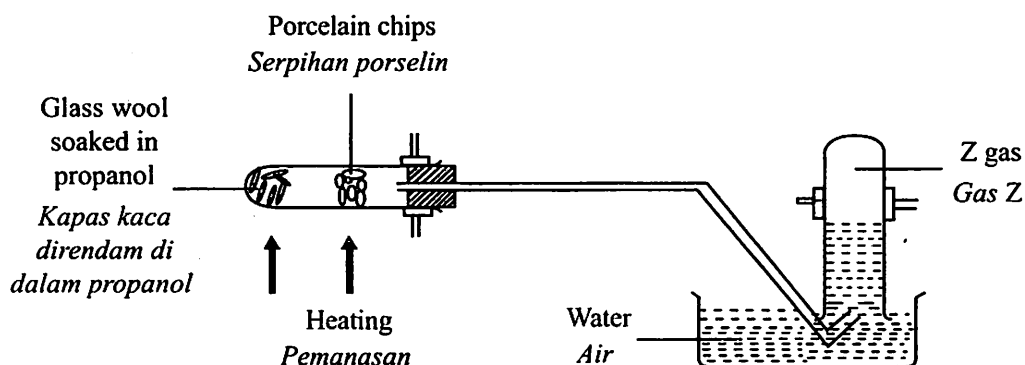


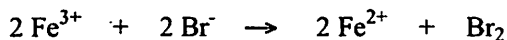
Diagram 11
 Rajah 11

Which of the following is the characteristic of Z gas?
Antara yang berikut, yang manakah merupakan sifat gas Z?

- A Brown colour
Berwarna perang
 B Decolourised purple colour of acidified potassium manganate(VII) solution
Menyahwarnakan warna ungu larutan kalium manganat(VII) berasid
 C Can change blue litmus paper to red
Boleh menukarkan kertas litmus biru kepada merah
 D Can be oxidized to form carboxylic acid
Boleh dioksidakan untuk membentuk asid karboksilik

- 26 The following chemical equation shows the reaction between iron(III) sulphate solution and potassium bromide solution.

Persamaan kimia berikut menunjukkan tindak balas antara larutan ferum(III) sulfat dengan larutan kalium bromida.



Which statement is true about this reaction?

Pernyataan manakah yang benar mengenai tindak balas ini?

- A Iron(III) ion releases one electron to form iron(II) ion
Ion ferum(III) membebaskan satu elektron membentuk ion ferum(II)
- B Iron(III) ion receives one electron to form iron(II) ion
Ion ferum(III) menerima satu elektron membentuk ion ferum(II)
- C Iron(III) ion reacts with bromide ion to form an iron(III) bromide
Ion ferum(III) bertindak balas dengan ion bromida membentuk ferum(III) bromida
- D Bromide ion receives two electrons to form a bromine molecule
Ion bromida menerima dua elektron membentuk satu molekul bromin

- 27 Table 1 shows several reactions between acid and alkali.

Jadual 1 menunjukkan beberapa tindak balas di antara asid dan alkali.

Experiment <i>Eksperimen</i>	Chemical equation <i>Persamaan kimia</i>
I	$\text{HCl}_{(\text{aq})} + \text{NaOH}_{(\text{aq})} \longrightarrow \text{NaCl}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
II	$\text{HNO}_3_{(\text{aq})} + \text{NaOH}_{(\text{aq})} \longrightarrow \text{NaNO}_3_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
III	$\text{H}_2\text{SO}_4_{(\text{aq})} + 2\text{NaOH}_{(\text{aq})} \longrightarrow 2\text{Na}_2\text{SO}_4_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$
IV	$\text{CH}_3\text{COOH}_{(\text{aq})} + \text{NaOH}_{(\text{aq})} \longrightarrow \text{CH}_3\text{COONa}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$

Table 1

Jadual 1

Which experiments produce the lowest heat of neutralisation?

Eksperimen manakah menghasilkan haba peneutralan yang paling rendah?

- A Experiment I
Eksperimen I
- B Experiment II
Eksperimen II
- C Experiment III
Eksperimen III
- D Experiment IV
Eksperimen IV

- 28 Soap is less effective as a cleaning agent in hard water compared to detergent. Which of the following explains the statement above?

Sabun adalah kurang berkesan sebagai bahan pencuci dalam air liat berbanding dengan detergen.

Antara yang berikut, yang manakah menerangkan pernyataan di atas?

- A Soap forms insoluble salts with metal ions in hard water
Sabun membentuk garam tak terlarutkan dengan ion logam dalam air liat
- B Soap has hydrophobic part which is not soluble in hard water
Sabun mempunyai bahagian hidrofobik yang tidak larut dalam air liat
- C Soap has hydrophilic part which is less soluble in hard water compared to detergent
Sabun mempunyai bahagian hidrofilik yang kurang larut dalam air liat banding dengan detergen
- D Soap does not form scum in hard water but detergent forms scum in hard water
Sabun tidak membentuk kekat dalam air liat tetapi detergen membentuk kekat dalam air liat

- 29 Diagram 12 shows the elements in Period 3 of the Periodic Table of Element.
Rajah 12 menunjukkan unsur-unsur pada Kala 3 dalam Jadual Berkala Unsur.

Na	Mg	Al	Si	P	S	Cl	Ar
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Diagram 12
Rajah 12

Which of the following statement is true?

Antara pernyataan yang berikut, yang manakah benar?

- A Argon is denser than magnesium
Argon lebih tumpat berbanding magnesium
- B Chlorine is more electronegative than sulphur
Klorin lebih elektronegatif berbanding sulfur
- C The size of sodium atom is smaller than aluminium atom
Saiz atom natrium adalah lebih kecil berbanding atom aluminium
- D Oxide of elements changes from acidic to basic from left to right in Period 3
Sifat oksida unsur berubah dari berasid kepada bes merentasi Kala 3 dari kiri ke kanan

- 30 The number of valence electrons for atoms X and Y are 4 and 6 respectively. Which of the following are the correct chemical formula and type of bonding for compound formed between X and Y?

Bilangan elektron valens bagi atom X dan atom Y masing-masing adalah 4 dan 6.

Antara yang berikut, yang manakah formula kimia dan jenis ikatan yang betul bagi sebatian yang terbentuk antara X dan Y?

	Chemical Formula <i>Formula Kimia</i>	Type of bonding <i>Jenis Ikatan</i>
A	XY ₂	ionic <i>ionik</i>
B	XY ₂	covalent <i>kovalen</i>
C	XY ₃	covalent <i>kovalen</i>
D	XY ₃	ionic <i>ionik</i>

- 31 Diagram 13 shows the electrolysis of dilute copper(II) chloride solution using copper metal as electrodes.

Rajah 13 menunjukkan proses elektrolisis larutan kuprum(II) klorida cair menggunakan logam kuprum sebagai elektrod.

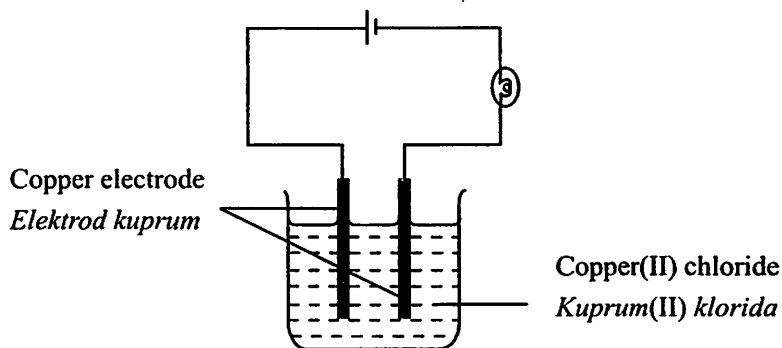


Diagram 13

Rajah 13

Which half equation represents the reaction at the anode?

Persamaan setengah manakah yang mewakili tindak balas di anod?

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

- 32 Diagram 14 shows two test tubes containing zinc chloride and ammonium chloride solutions.
Rajah 14 menunjukkan dua tabung uji mengandungi larutan zink klorida dan larutan ammonium klorida.

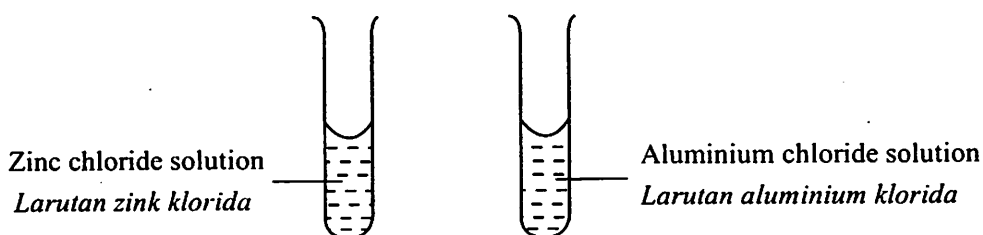


Diagram 14
Rajah 14

Which of the following can be used to differentiate these solutions?

Antara yang berikut, yang manakah boleh digunakan untuk membezakan larutan-larutan tersebut?

- A Ammonia solution
Larutan ammonia
- B Barium nitrate solution
Larutan barium nitrat
- C Silver nitrate solution
Larutan argentum nitrat
- D Sodium hydroxide solution
Larutan natrium hidroksida

- 33 Diagram 15 shows the set-up of the apparatus for a reaction.
Rajah 15 menunjukkan susunan radas bagi satu tindak balas.

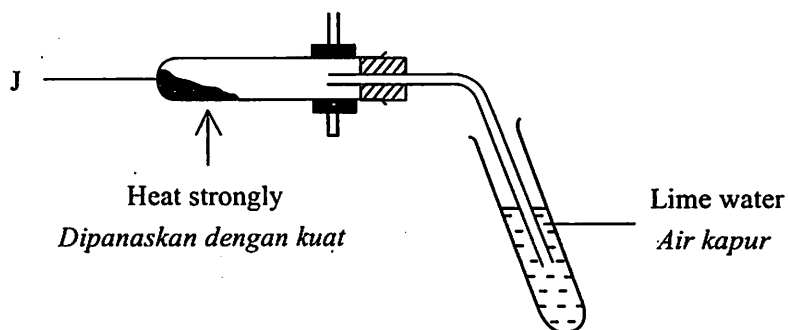


Diagram 15
Rajah 15

When J is heated strongly, the lime water becomes cloudy.
Which of the following compound could be J?

*Apabila J dipanaskan dengan kuat, air kapur menjadi keruh.
Antara sebatian yang berikut, yang manakah mungkin J?*

- A Potassium carbonate
Kalium karbonat
- B Lead(II) carbonate
Plumbum(II) karbonat
- C Sodium carbonate
Natrium karbonat
- D Calcium nitrate
Kalsium nitrat

- 34 Diagram 16 shows the arrangement of atoms in bronze.
Rajah 16 menunjukkan susunan atom dalam gangsa.

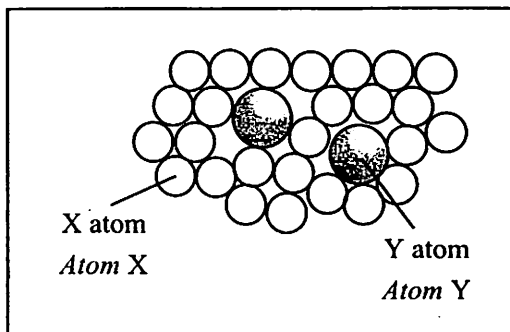


Diagram 16
Rajah 16

Which of the following is the correct match of X atom and Y atom?
Antara padanan berikut, yang manakah betul tentang atom X dan atom Y?

	X atom Atom X	Y atom Atom Y
A	Copper Kuprum	Tin Timah
B	Zinc Zink	Copper Kuprum
C	Tin Timah	Copper Kuprum
D	Copper Kuprum	Zinc Zink

- 35 Diagram 17 shows the graph of volume of carbon dioxide gas against time. Curve P is obtained from an reaction between excess calcium carbonate powder with 50 cm³ of 1 mol dm⁻³ sulphuric acid.

Rajah 17 menunjukkan graf isi padu gas karbon dioksida melawan masa. Lengkung P diperolehi dari tindak balas antara serbuk kalsium karbonat berlebihan dengan 50 cm³ asid sulfurik 1 mol dm⁻³.

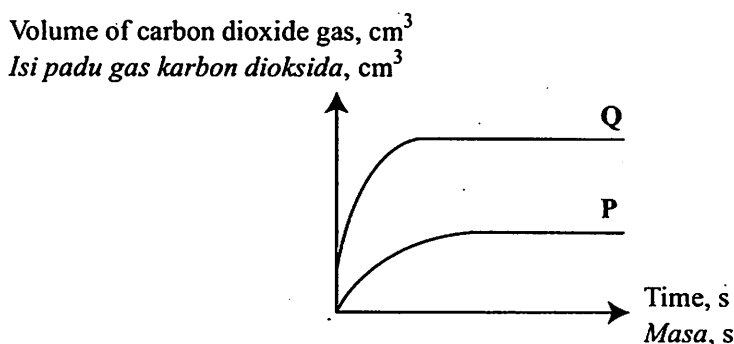


Diagram 17
Rajah 17

Which of the following conditions will produce curve Q when excess of calcium carbonate reacts with sulphuric acid?

Antara keadaan berikut, yang manakah akan menghasilkan lengkung Q apabila kalsium karbonat berlebihan bertindak balas dengan asid sulfurik?

	Calcium carbonate, CaCO ₃ Kalsium karbonat, CaCO ₃	Volume and concentration of sulphuric acid Isi padu dan kepekatan asid sulfurik
A	Granules Ketulan	100 cm ³ of 1 mol dm ⁻³
B	Powder Serbuk	100 cm ³ of 1 mol dm ⁻³
C	Granules Ketulan	50 cm ³ of 2 mol dm ⁻³
D	Powder Serbuk	50 cm ³ of 2 mol dm ⁻³

- 36 Diagram 18 shows the conversion of ethanol to ethanoic acid and ethene.
Rajah 18 menunjukkan penukaran etanol kepada asid etanoik dan etena.

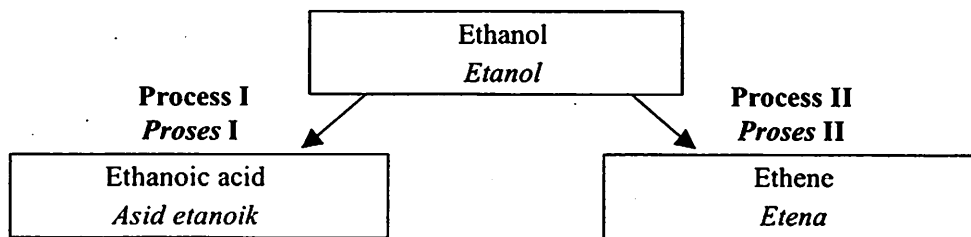


Diagram 18
Rajah 18

Which of the following statements are true?

Antara pernyataan yang berikut, yang manakah adalah benar?

- I Process II is a hydration reaction
Proses II adalah tindak balas penghidratan
 - II Ethanol reacts with ethanoic acid to form ethyl ethanoate
Etanol bertindak balas dengan asid etanoik untuk menghasilkan etil etanoat
 - III In Process I, ethanol is converted to ethanoic acid in the presence of acidified potassium dichromate(VI) solution
Dalam Proses I, etanol ditukarkan kepada asid etanoik dengan kehadiran larutan kalium dikromat(VI) berasid
 - IV Process I is an addition reaction
Proses I adalah tindak balas penambahan
- A I and II only
I dan II sahaja
- B II and III only
II dan III sahaja
- C I, II and III only
I, II dan III sahaja
- D III and IV only
III dan IV sahaja

- 37 A student is currently facing a lot of family problems and he is under depression. He cannot really sleep normally for the last two weeks due to his family problems.

Seorang pelajar sedang menghadapi banyak masalah keluarga dan mengalami kemurungan. Dia tidak dapat tidur lena sejak dua minggu lepas disebabkan oleh masalah keluarganya.

Which of the following medications could be suitable to treat him?

Antara ubat yang berikut, yang manakah mungkin sesuai untuk merawat pelajar ini?

- A Codeine
Kodeina
- B Barbiturate
Barbiturat
- C Paracetamol
Parasetamol
- D Streptomycin
Streptomisin

- 38 Diagram 19 shows the energy level diagram of the precipitation reaction between silver nitrate solution and potassium chloride solution.

Rajah 19 menunjukkan rajah aras tenaga bagi tindak balas pemendakan antara larutan argentum nitrat dengan larutan kalium klorida.

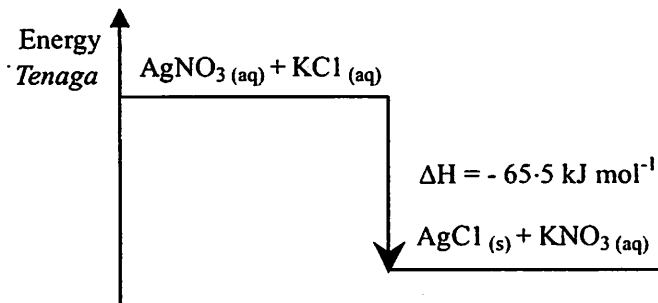


Diagram 19

Rajah 19

What is the increase in temperature if 100 cm^3 of 2 mol dm^{-3} silver nitrate solution is reacted with 100 cm^3 of 2 mol dm^{-3} potassium chloride solution?

Berapakah kenaikan suhu, jika 100 cm^3 larutan argentum nitrat, 2 mol dm^{-3} bertindak balas dengan 100 cm^3 larutan kalium klorida, 2 mol dm^{-3} ?

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

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

- A $7.8 \text{ }^\circ\text{C}$
- B $15.6 \text{ }^\circ\text{C}$
- C $31.2 \text{ }^\circ\text{C}$
- D $3.9 \text{ }^\circ\text{C}$

- 39 Table 2 shows the number of electrons and nucleon number for particles P, Q^{2-} , R^- and S^+ .
Jadual 2 menunjukkan bilangan elektron dan nombor nukleon bagi zarah P, Q^{2-} , R^- dan S^+ .

Particle <i>Zarah</i>	Number of electron <i>Bilangan elektron</i>	Nucleon number <i>Nombor nukleon</i>
P	17	35
Q^{2-}	18	32
R^-	18	37
S^+	18	39

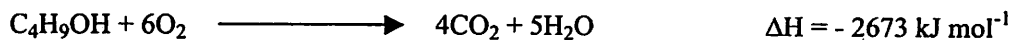
Table 2
Jadual 2

Which of the following is a pair of isotopes of an element?

Antara pasangan zarah yang berikut, yang manakah isotop-isotop bagi suatu unsur?

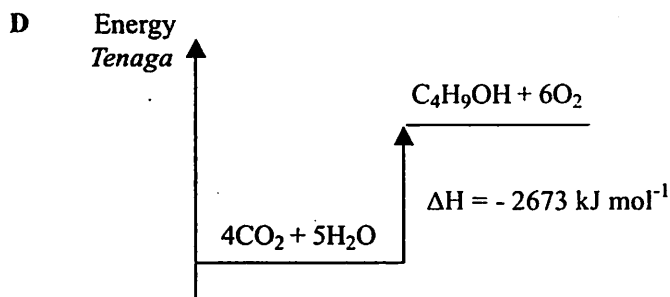
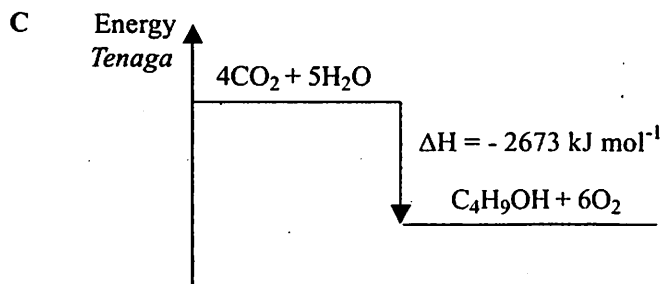
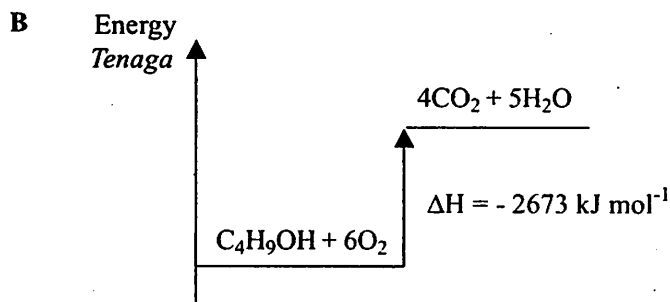
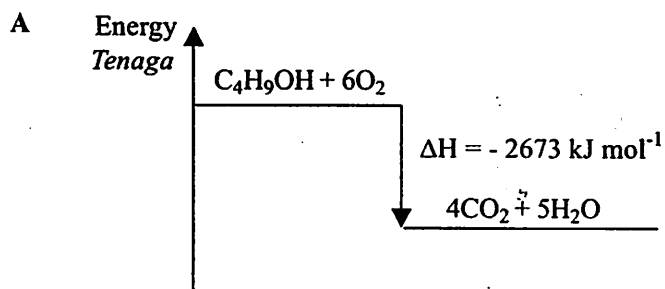
- A P and R
P dan R
- B P and S
P dan S
- C Q and R
Q dan R
- D Q and S
Q dan S

- 40 The following equation shows a combustion reaction of butanol.
Persamaan berikut menunjukkan tindak balas pembakaran bagi butanol.



Which of the energy level diagrams represents the reaction?

Antara rajah aras tenaga yang berikut, yang manakah mewakili tindak balas itu?



- 41 What is the mass of magnesium required to react completely with excess dilute sulphuric acid to produce 120 cm^3 of hydrogen gas at room conditions?

[Relative atomic mass: $\text{Mg} = 24$;

Molar volume at room temperature = $24 \text{ dm}^3 \text{ mol}^{-1}$]

Berapakah jisim magnesium yang diperlukan untuk bertindak balas lengkap dengan asid sulfurik yang berlebihan untuk menghasilkan 120 cm^3 gas hidrogen pada keadaan bilik?

[Jisim atom relatif: $\text{Mg} = 24$;

Isi padu molar gas pada suhu bilik = $24 \text{ dm}^3 \text{ mol}^{-1}$]

- A 0.12 g
B 1.20 g
C 0.24 g
D 0.06 g
- 42 Table 3 shows the position of elements P, Q and R in the Periodic Table of Elements.
Jadual 3 menunjukkan kedudukan unsur-unsur P, Q dan R di dalam Jadual Berkala Unsur.

Element <i>Unsur</i>	Group <i>Kumpulan</i>	Period <i>Kala</i>
P	1	3
Q	17	3
R	1	4

Table 3
Jadual 3

Which of the following is true about elements P, Q and R?

Antara pernyataan berikut, yang manakah benar tentang unsur-unsur P, Q dan R?

- A The atom Q is smaller than the atom P
Atom Q lebih kecil daripada atom P
- B Atom of Q is the least electronegative
Atom Q paling kurang elektronegatif
- C Atom P has a higher tendency to release electrons than atom R
Atom P mempunyai kecenderungan lebih tinggi untuk menyingkirkan elektron daripada atom R
- D The number of protons in the nucleus of Q is more than R
Bilangan proton di dalam nukleus Q lebih banyak daripada R

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- 43 Diagram 20 shows the symbol for atoms of two elements M and N.
Rajah 20 menunjukkan simbol atom bagi dua unsur M dan N.

23 M 11	16 N 8
---------------	--------------

Diagram 20
Rajah 20

What is the mass of one mole of the compound when these two elements reacted?
Apakah jisim bagi satu mol sebatian apabila dua unsur ini bertindak balas?

- A 49 g
 B 55 g
 C 62 g
 D 30 g
- 44 Table 4 shows the voltmeter reading when different pairs of metal electrodes are immersed in silver nitrate solution.
Jadual 4 menunjukkan bacaan voltmeter apabila pasangan-pasangan elektrod logam yang berlainan dicelup dalam larutan argentum nitrat.

Electrodes <i>Elektrod-elektrod</i>		Voltmeter reading / V <i>Bacaan voltmeter / V</i>
Positive <i>Positif</i>	Negative <i>Negatif</i>	
K	L	2.7
N	M	1.4
K	N	0.8
M	L	0.5

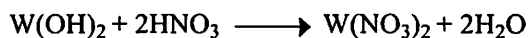
Table 4
Jadual 4

Which of the following is the correct descending order of these metals in the electrochemical series?

Antara yang berikut, manakah susunan secara menurun yang betul bagi logam-logam ini dalam siri elektrokimia?

- A L, N, K, M
 B M, N, K, L
 C L, M, N, K
 D K, N, M, L

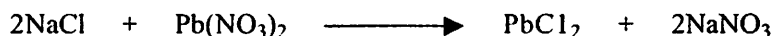
- 45 The following equation shows the reaction between hydroxide solution of W and nitric acid.
Persamaan berikut menunjukkan tindak balas antara larutan hidroksida bagi W dengan asid nitrik.



What is the concentration of the 20 cm³ nitric acid needed to neutralize 20 cm³ of 0.5 mol dm⁻³ hydroxide solution of W?

Apakah kepekatan 20 cm³ asid nitrik yang diperlukan untuk meneutralkan 20 cm³ larutan W hidroksida 0.5 mol dm⁻³?

- A 0.25 mol dm⁻³
B 0.50 mol dm⁻³
C 1.00 mol dm⁻³
D 2.00 mol dm⁻³
- 46 The following chemical equation shows the reaction between sodium chloride solution and silver nitrate solution.
Persamaan kimia berikut menunjukkan tindak balas di antara larutan natrium klorida dan larutan argentum nitrat.



What is the mass of lead(II) chloride precipitate produced when 200 cm³ of 0.1 mol dm⁻³ sodium chloride solution reacts completely with excess lead(II) nitrate solution?

[Relative atomic mass: Pb = 207, Cl = 35.5]

Berapakah jisim mendakan plumbum(II) klorida yang terhasil apabila 200 cm³ larutan natrium klorida 0.1 mol dm⁻³ bertindak balas lengkap dengan larutan plumbum(II) nitrat berlebihan?

[Jisim atom relatif: Pb = 207, Cl = 35.5]

- A 2.78 g
B 2.87 g
C 3.78 g
D 3.87 g

- 47 Diagram 21 shows the apparatus set-up to study the corrosion of an iron nail.
Rajah 21 menunjukkan susunan radas untuk mengkaji kakisan pada paku besi.

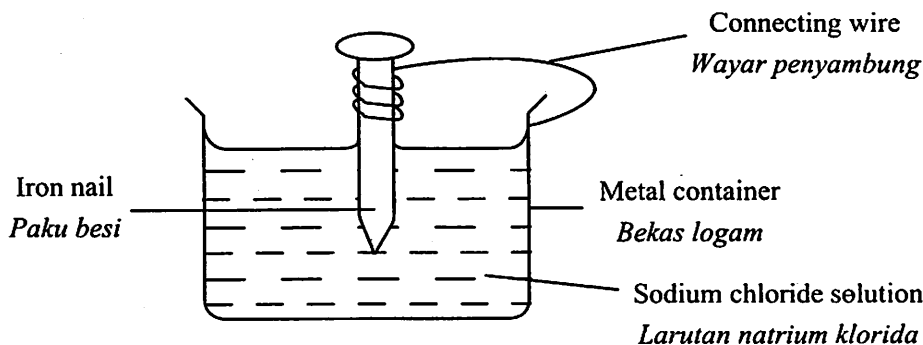


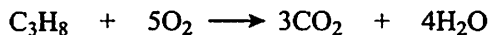
Diagram 21
Rajah 21

Which of the following metals causes the corrosion of iron nail at the highest rate when used as a metal container?

Antara logam-logam yang berikut, yang manakah menyebabkan kadar kakisan paku besi paling tinggi apabila digunakan sebagai bekas logam?

- A Magnesium
Magnesium
- B Tin
Stanum
- C Lead
Plumbum
- D Silver
Argentum
- 48 What is the maximum volume of carbon dioxide gas produced at room conditions when excess calcium carbonate reacts with 100 cm^3 of 0.5 mol dm^{-3} hydrochloric acid?
Berapakah isi padu maksimum gas karbon dioksida yang terhasil pada keadaan bilik apabila kalsium karbonat berlebihan bertindak balas dengan 100 cm^3 asid hidroklorik 0.5 mol dm^{-3} ?
- [Molar volume of gas at room temperature and pressure = $24 \text{ dm}^3 \text{ mol}^{-1}$]
 [*Isi padu molar gas pada suhu bilik dan tekanan bilik = $24 \text{ dm}^3 \text{ mol}^{-1}$]*
- A 1.20 dm^3
- B 0.60 dm^3
- C 1.12 dm^3
- D 0.56 dm^3

- 49 The following chemical equation shows the complete combustion of propane gas.
Persamaan kimia berikut menunjukkan pembakaran lengkap bagi gas propana.



What is the mass of carbon dioxide gas produced when 2.4 dm³ of propane gas is completely burnt at room conditions?

[Molar mass of CO₂ = 44 g mol⁻¹

Molar volume of gas at room conditions = 24 dm³ mol⁻¹]

Berapakah jisim gas karbon dioksida yang dihasilkan jika 2.4 dm³ gas propana dibakar lengkap pada keadaan bilik?

[Jisim molar CO₂ = 44 g mol⁻¹

Isi padu molar gas pada keadaan bilik = 24 dm³ mol⁻¹]

- A 0.44 g
B 13.2 g
C 4.4 g
D 1.32 g
- 50 What is the oxidation number of manganese in KMnO₄?
Apakah nombor pengoksidaan mangan dalam sebatian KMnO₄?
- A +7
B +1
C +4
D +6

END OF QUESTION PAPER
KERTAS SOALAN TAMAT