

CONFIDENTIAL

4541/1

Chemistry

Paper 1

Ogos

2018

1 1/4 hour



**SIJIL PENDIDIKAN
MAKTAB RENDAH SAINS MARA
2018**

CHEMISTRY

Paper 1

One hour and fifteen minutes

**DO NOT OPEN THE QUESTION BOOKLET
UNTIL BEING TOLD TO DO SO.**

- 1 *This question booklet is bilingual
Kertas soalan ini adalah dalam dwibahasa*
- 2 *Candidates are advised to read INFORMATION FOR CANDIDATES on page 34
Calon dikehendaki membaca MAKLUMAT UNTUK PELAJAR di halaman 34*

Kertas peperiksaan ini mengandungi 34 halaman bercetak dan 2 halaman tidak bercetak

- 1 Which of the following elements are in Group 18 in the Periodic Table of Elements?
Antara berikut, manakah unsur yang berada di dalam Kumpulan 18 Jadual Berkala Unsur?
- A Argon and xenon
Argon dan xenon
 - B Hydrogen and oxygen
Hidrogen dan oksigen
 - C Oxygen and xenon
Oksigen dan xenon
 - D Argon and hydrogen
Argon dan hidrogen
- 2 What is the meaning of oxidation?
Apakah yang dimaksudkan dengan pengoksidaan?
- A Loss of oxygen
Hilang oksigen
 - B Gain of hydrogen
Terima hidrogen
 - C Loss of electron
Hilang elektron
 - D Decrease in oxidation number
Pengurangan nombor pengoksidaan
- 3 Which of the following has the highest rate of reaction?
Antara berikut, yang manakah mempunyai kadar tindak balas paling tinggi?
- A Rusting of iron
Pengaratan besi
 - B Fermentation of sugar
Penapaian gula
 - C Decomposition of food
Penguraian makanan
 - D Combustion of alcohol
Pembakaran alkohol

- 4 Diagram 1 shows the extraction of a metal from its ore through electrolysis.
Rajah 1 menunjukkan pengekstrakan suatu logam dari bijahnya secara elektrolisis.

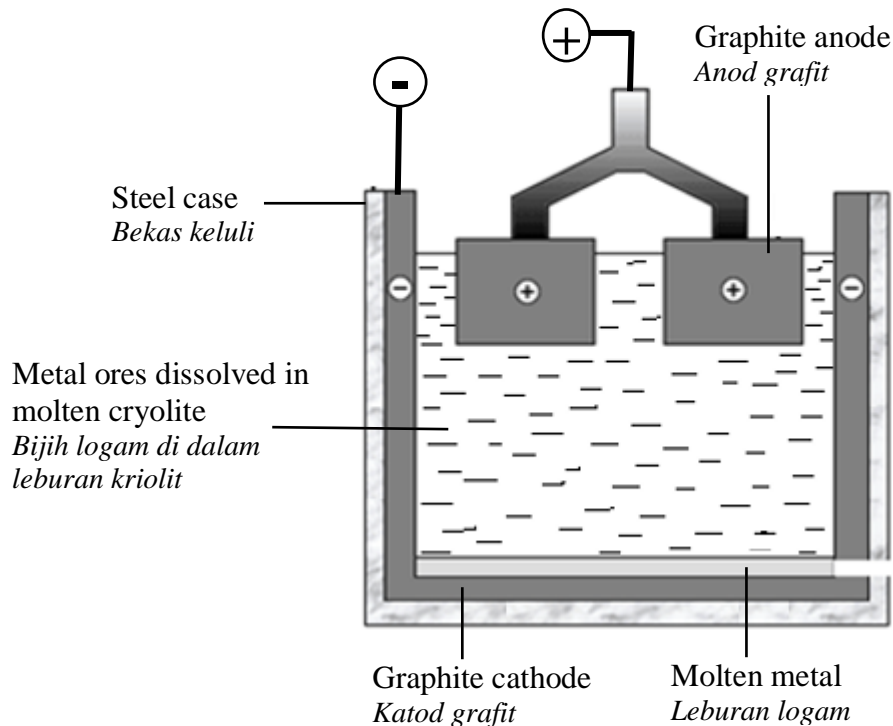


Diagram 1
Rajah 1

What is the function of cryolite?
Apakah fungsi kriolit?

- A To produce more metal
Untuk menghasilkan lebih banyak logam
- B To prevent the electrodes from being oxidized
Untuk mengelakkan elektrod mengalami pengoksidaan
- C To act as a catalyst
Untuk bertindak sebagai mangkin
- D To lower the melting point of the metal ores
Untuk merendahkan takat lebur bijih logam
- 5 What is the function of lecithin in ice cream making?
Apakah fungsi lesitin dalam pembuatan ais krim?
- A Make it last longer
Supaya tahan lama
- B As a stabiliser
Sebagai penstabil
- C As artificial flavour
Sebagai perisa tiruan
- D Prevent it from being oxidised
Mengelakkan ia dioksidakan

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- 6 Which statement is correct about catalyst?
Pernyataan manakah yang betul tentang mangkin?
- A Only exists as solid at room temperature
Hanya wujud sebagai pepejal pada suhu bilik
 - B Affect the amount of products formed
Mempengaruhi kuantiti hasil yang terbentuk
 - C Chemically unchanged after the reaction
Tidak berubah secara kimia selepas tindak balas
 - D Totally used up in the reaction
Habis digunakan di dalam tindak balas

- 7 Who discovered proton and neutron of an atom?
Siapakah yang menjumpai proton dan neutron dalam suatu atom?

	Proton <i>Proton</i>	Neutron <i>Neutron</i>
A	Neils Bohr	J.J. Thomson
B	Ernest Rutherford	James Chadwick
C	J.J. Thomson	James Chadwick
D	Ernest Rutherford	Neils Bohr

- 8 Which of the following is a strong acid?
Antara berikut, yang manakah asid kuat?
- A Nitric acid
Asid nitrik
 - B Methanoic acid
Asid metanoik
 - C Oxalic acid
Asid oksalik
 - D Phosphoric acid
Asid fosforik

- 9 The following statement shows the characteristics of a metal.
Pernyataan berikut menunjukkan ciri-ciri suatu logam.

- Able to form complex ion
Berupaya membentuk ion kompleks
- Can be used as a catalyst
Boleh digunakan sebagai mangkin

Which of the following metals has the above characteristics?
Antara logam berikut, yang manakah mempunyai ciri-ciri di atas?

- A Sodium
Natrium
- B Barium
Barium
- C Calcium
Kalsium
- D Iron
Ferum
- 10 Diagram 2 shows an apparatus set-up to prepare a soluble salt.
Rajah 2 menunjukkan susunan radas bagi menyediakan suatu garam terlarutkan.

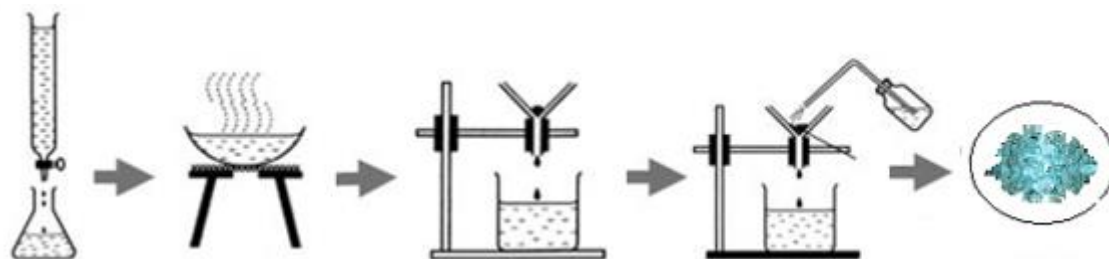


Diagram 2
Rajah 2

Which of the following salt is prepared by this method?
Antara berikut, garam manakah yang boleh disediakan dengan kaedah ini?

- A Zinc chloride
Zink klorida
- B Sodium sulphate
Natrium sulfat
- C Copper(II) sulphate
Kuprum(II) sulfat
- D Lead(II) nitrate
Plumbum(II) nitrat

- 11 Diagram 3 shows the electron arrangement of a compound.
Rajah 3 menunjukkan susunan elektron bagi suatu sebatian.

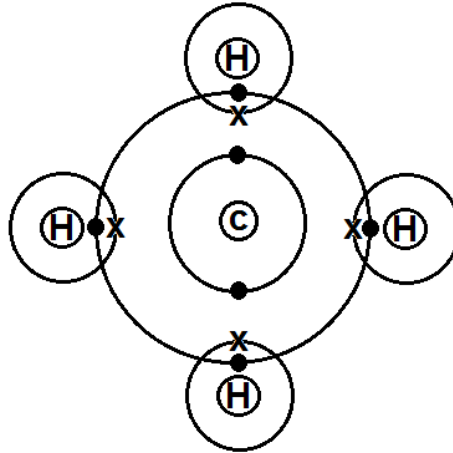


Diagram 3
Rajah 3

Which of the following is correct about the compound?
Antara berikut, yang manakah betul mengenai sebatian ini?

- A Soluble in benzene
Larut dalam benzena
- B Soluble in water
Larut dalam air
- C Have high boiling point
Mempunyai takat didih yang tinggi
- D Can conduct electricity in molten state
Boleh mengalirkan elektrik dalam keadaan leburan
- 12 Which of the following reaction is endothermic?
Antara berikut, yang manakah tindak balas endotermik?
- A Combustion
Pembakaran
- B Neutralisation
Peneutralan
- C Photosynthesis
Fotosintesis
- D Respiration
Respirasi

13 Which of the following glass is suitable as laboratory apparatus?
Antara kaca berikut, yang manakah sesuai sebagai radas makmal?

- I Soda lime glass
Kaca soda kapur
- II Lead crystal glass
Kaca kristal plumbum
- III Borosilicate glass
Kaca borosilikat
- IV Fused glass
Kaca terlakur
- 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

14 Which of the following statements is correct about alkali?
Antara pernyataan berikut, yang manakah betul bagi alkali?

- A Bases that soluble in water
Bes yang larut dalam air
- B Shows a pH value less than 7
Menunjukkan nilai pH kurang daripada 7
- C Ionises in water to form hydroxonium ions
Mengion dalam air menghasilkan ion hidroksonium
- D Reacts with carbonate salt to release carbon dioxide gas
Bertindak balas dengan garam karbonat menghasilkan gas karbon dioksida

- 15 Diagram 4 shows an activity to study the precipitation reaction.
Rajah 4 menunjukkan aktiviti untuk mengkaji tindak balas pemendakan.

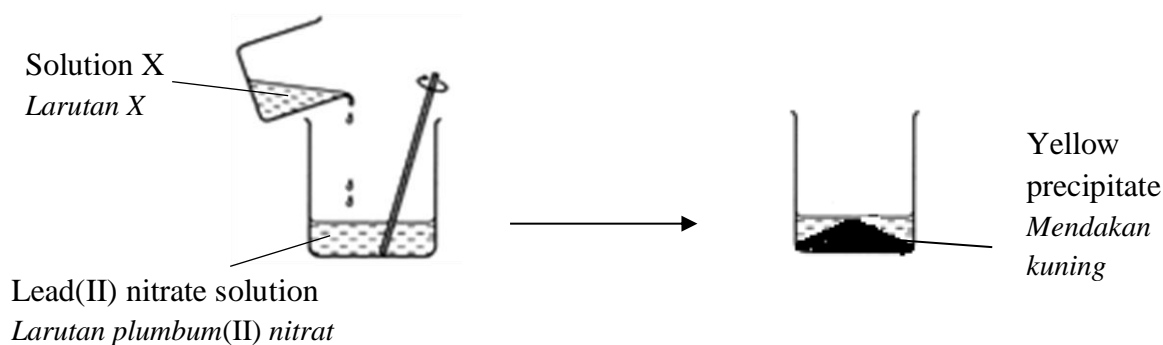


Diagram 4
Rajah 4

When solution X is added to lead(II) nitrate solution, a yellow precipitate is formed.

What is solution X?

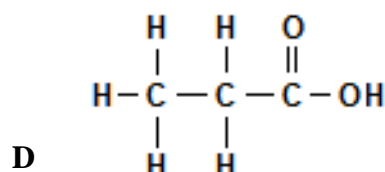
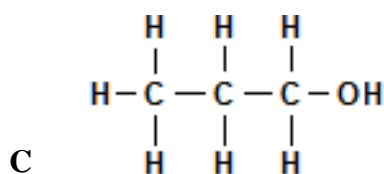
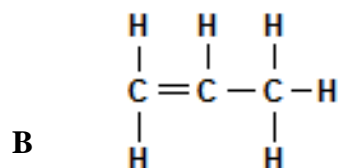
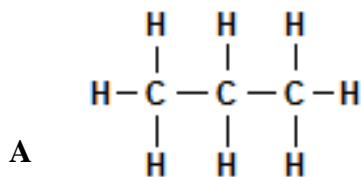
Apabila larutan X ditambah kepada larutan plumbum(II) nitrat, satu mendakan kuning dihasilkan.

Apakah larutan X?

- A Sodium chloride
Natrium klorida
- B Sodium carbonate
Natrium karbonat
- C Potassium iodide
Kalium iodida
- D Potassium sulphate
Kalium sulfat
- 16 What is the meaning of rate of reaction?
Apakah yang dimaksudkan dengan kadar tindak balas?
- A Decrease in amount of reactant
Pengurangan kuantiti bahan tindak balas
- B Decrease in amount of product against time
Pengurangan kuantiti hasil tindak balas dengan masa
- C Increase in amount of product against time
Peningkatan kuantiti hasil tindak balas dengan masa
- D Increase in amount of reactant against time
Peningkatan kuantiti bahan tindak balas dengan masa

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- 17 Which compound is unsaturated hydrocarbon?
Sebatian manakah adalah suatu hidrokarbon tak tepu?



- 18 Table 1 shows example of elements in the Periodic Table of Elements.
Jadual 1 menunjukkan beberapa unsur dalam Jadual Berkala Unsur.

Element <i>Unsur</i>	Type of element <i>Jenis unsur</i>
Sodium <i>Natrium</i>	Metal <i>Logam</i>
Magnesium <i>Magnesium</i>	Metal <i>Logam</i>
Carbon <i>Karbon</i>	Non Metal <i>Bukan logam</i>
Oxygen <i>Oksigen</i>	Non metal <i>Bukan logam</i>
Hydrogen <i>Hidrogen</i>	Non metal <i>Bukan logam</i>

Table 1
Jadual 1

Which two elements would combine to form an ionic compound?
Manakah dua unsur yang boleh bergabung membentuk satu sebatian ionik?

- A Sodium and magnesium
Sodium dan magnesium
- B Carbon and oxygen
Karbon dan oksigen
- C Hydrogen and oxygen
Hidrogen dan oksigen
- D Magnesium and oxygen
Magnesium dan oksigen

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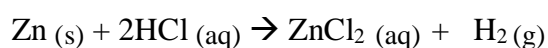
- 19 Which of the following is true about carbon compound?
Antara berikut, yang manakah betul tentang sebatian karbon?

	Carbon compound <i>Sebatian karbon</i>	General formula <i>Formula am</i>	Functional group <i>Kumpulan berfungsi</i>
A	Alkane <i>Alkana</i>	C_nH_{2n+2}	C-C
B	Alkene <i>Alkena</i>	C_nH_{2n+1}	C=C
C	Alcohol <i>Alkohol</i>	$C_nH_{2n+2}OH$	-OH
D	Carboxylic acid <i>Asid karboksilik</i>	$C_nH_{2n}COOH$	-COOH

- 20 Which of the following is a sublimation process?
Antara berikut, yang manakah menunjukkan proses pemejalwapan?

- A Bromine vapour spreads throughout gas jar
Wap bromin tersebar keseluruh balang gas
- B Water changes into the ice in the refrigerator
Air bertukar menjadi ais dalam peti sejuk
- C Moth ball in cupboard becomes smaller
Ubat gegat dalam almari menjadi lebih kecil
- D Volume of perfume decreases in the open bottle
Isipadu minyak wangi berkurang dalam botol yang terbuka

- 21 The following equation represents a chemical reaction
Persamaan berikut mewakili satu tindak balas kimia.



Which statement is correct?
Pernyataan yang manakah betul?

- A 2 moles of zinc react with 1 mole of hydrochloric acid
2 mol zink bertindakbalas dengan 1 mol asid hidroklorik
- B The products are solid zinc chloride and hydrogen gas
Hasil tindakbalas ialah pepejal zink klorida dan gas hidrogen
- C The reactants are solid zinc and hydrochloric acid solution
Bahan tindakbalas ialah pepejal zink dan larutan asid hidroklorik
- D 1 mole of zinc chloride and 2 moles of hydrogen gas are formed
1 mol zink klorida dan 2 mol gas hidrogen telah terbentuk

- 22 Diagram 5 shows the electron arrangement of ammonia.
Rajah 5 menunjukkan susunan elektron bagi ammonia.

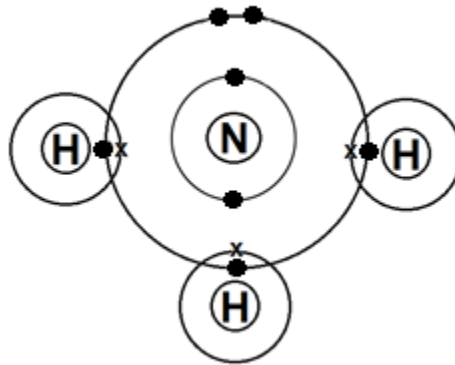


Diagram 5
Rajah 5

What is the electron arrangement of atom N?
Apakah susunan elektron bagi atom N?

- A 2.3
- B 2.5
- C 2.7
- D 2.8

- 23 Table 2.1 shows the colour changes for three indicators.
Jadual 2.1 menunjukkan perubahan warna bagi tiga penunjuk.

Indicator <i>Penunjuk</i>	Colour in pH 2 solution <i>Warna dalam larutan pH 2</i>	Colour in pH 10 solution <i>Warna dalam larutan pH 10</i>
Phenolphthalein <i>Fenolftalein</i>	Colourless <i>Tanpa warna</i>	Pink <i>Merah jambu</i>
Methyl orange <i>Metil jingga</i>	Red <i>Merah</i>	Yellow <i>Kuning</i>
Universal indicator <i>Penunjuk semesta</i>	Red <i>Merah</i>	Purple <i>Ungu</i>

Table 2.1
Jadual 2.1

- Table 2.2 shows the observation of three indicators in substances X, Y and Z.
Jadual 2.2 menunjukkan pemerhatian bagi tiga penunjuk di dalam bahan X, Y dan Z.

Mixture <i>Campuran</i>	Phenolphthalein in substance X <i>Fenolftalein di dalam bahan X</i>	Methyl orange in substance Y <i>Metil jingga di dalam bahan Y</i>	Universal indicator in substance Z <i>Penunjuk universal di dalam bahan Y</i>
Observation <i>Pemerhatian</i>	Pink <i>Merah jambu</i>	Red <i>Merah</i>	Purple <i>Ungu</i>

Table 2.2
Jadual 2.2

- Which of the following substances match the observation in Table 2.2?
Antara bahan-bahan berikut, yang manakah bersesuaian dengan pemerhatian di dalam Jadual 2.2?

	Substance X <i>Bahan X</i>	Substance Y <i>Bahan Y</i>	Substance Z <i>Bahan Z</i>
A	Herbal toothpaste <i>Ubat gigi herba</i>	Lime juice <i>Jus limau</i>	Soap <i>Sabun</i>
B	Lime juice <i>Jus limau</i>	Soap <i>Sabun</i>	Herbal toothpaste <i>Ubat gigi herba</i>
C	Herbal toothpaste <i>Ubat gigi herba</i>	Shampoo <i>Syampu</i>	Lime juice <i>Jus limau</i>
D	Vinegar <i>Cuka</i>	Lime juice <i>Jus limau</i>	Soap <i>Sabun</i>

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- 24 Diagram 6 shows the graph of temperature against time for the heating of naphthalene.

Rajah 6 menunjukkan graf suhu melawan masa bagi pemanasan naphthalena.

Temperature/ °C
Suhu/ °C

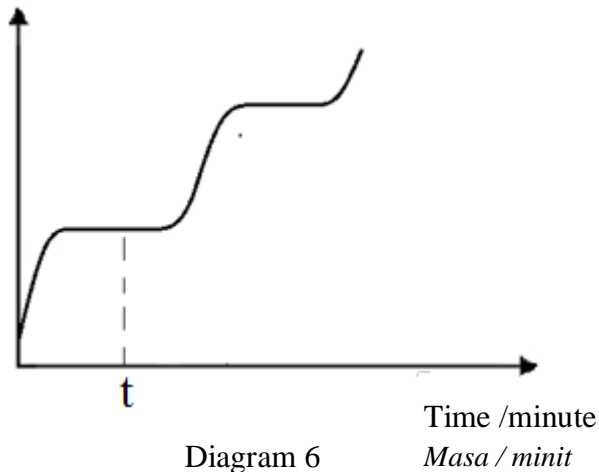


Diagram 6
Rajah 6

What is the process and state of matter at t?
Apakah proses dan keadaan jirim pada t?

	Process <i>Proses</i>	State of matter <i>Keadaan jirim</i>
A	Melting <i>Peleburan</i>	Solid and liquid <i>Pepejal dan cecair</i>
B	Freezing <i>Pembekuan</i>	Solid and liquid <i>Pepejal dan cecair</i>
C	Condensation <i>Kondensasi</i>	Liquid and gas <i>Cecair dan gas</i>
D	Boiling <i>Pendidihan</i>	Liquid and gas <i>Cecair dan gas</i>

- 25 Diagram 7 shows the apparatus set-up to investigate the redox reaction involving transfer of electrons at a distance.
Rajah 7 menunjukkan susunan radas untuk mengkaji tindak balas redoks yang melibatkan pemindahan elektron pada satu jarak.

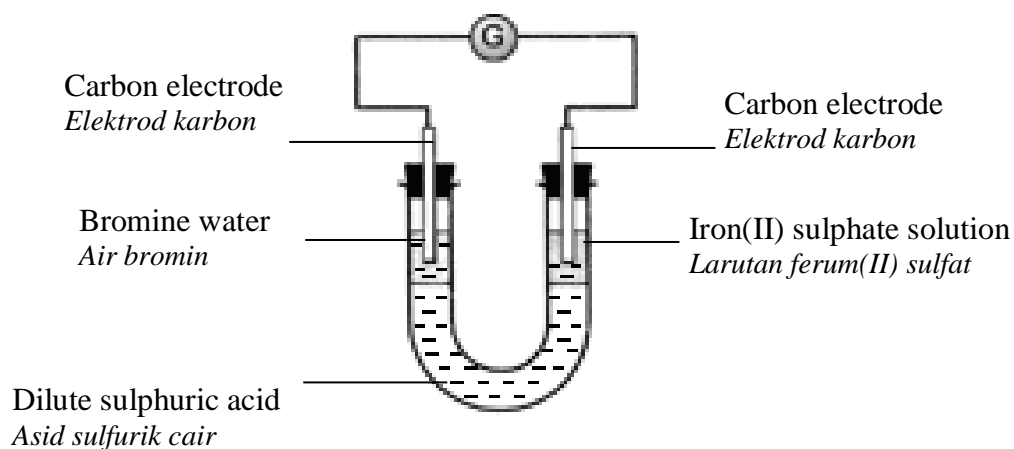


Diagram 7
Rajah 7

Which of the following is correct ?
Antara berikut yang manakah betul?

	Oxidation Process <i>Proses Pengoksidaan</i>	Reduction Process <i>Proses Penurunan</i>	Oxidizing agent <i>Agen Pengoksidaan</i>
A	Bromine water <i>Air bromin</i>	Iron(II) sulphate <i>Ferum(II) sulfat</i>	Iron(II) sulphate <i>Ferum(II) sulfat</i>
B	Iron(II) sulphate <i>Ferum(II) sulfat</i>	Bromine water <i>Air bromin</i>	Iron(II) sulphate <i>Ferum(II) sulfat</i>
C	Bromine water <i>Air bromin</i>	Iron(II) sulphate <i>Ferum(II) sulfat</i>	Bromine water <i>Air bromin</i>
D	Iron(II) sulphate <i>Ferum(II) sulfat</i>	Bromine water <i>Air bromin</i>	Bromine water <i>Air bromin</i>

- 26 Diagram 8 shows the apparatus set-up used to study the rate of reaction of calcium carbonate and hydrochloric acid.
Rajah 8 menunjukkan susunan radas bagi mengkaji kadar tindak balas antara kalsium karbonat dan asid hidroklorik.

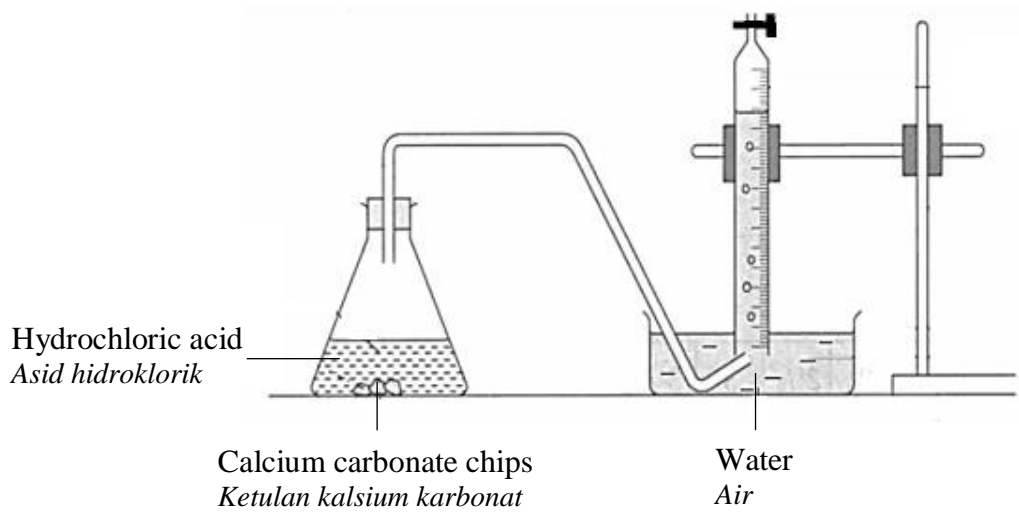


Diagram 8
Rajah 8

The rate of reaction can be increased by
Kadar tindak balas boleh ditingkatkan dengan

- A grinding the calcium carbonate
mengisar kalsium karbonat
- B lowering the temperature of hydrochloric acid
merendahkan suhu asid hidroklorik
- C using a larger conical flask
menggunakan kelalang kon yang lebih besar
- D adding water to hydrochloric acid
menambahkan air kepada asid hidroklorik

- 27 A group of student is required to confirm the presence of chloride ion in solution P.

What is the suitable reagent and expected observation in the test?

Sekumpulan pelajar dikehendaki mengesahkan kehadiran ion klorida dalam larutan P.

Apakah reagen yang sesuai dan pemerhatian yang dijangkakan dalam ujian itu?

	Reagent Reagen	Observation Pemerhatian
A	Dilute hydrochloride acid <i>Asid hidroklorik cair</i>	Gas released turns lime water chalky <i>Gas yang terbebas mengeruhkan air kapur</i>
B	Dilute nitric acid and silver nitrate solution <i>Asid nitrik cair dan larutan argentum nitrat</i>	White precipitate is formed <i>Mendakan putih terhasil</i>
C	Dilute hydrochloride acid and barium chloride solution <i>Asid hidroklorik dan larutan barium sulfat</i>	White precipitate is formed <i>Mendakan putih terhasil</i>
D	Dilute sulphuric acid, iron(II) sulphate solution and concentration sulphuric acid <i>Asid sulfurik cair, ferum(II) sulfat dan asid sulfurik pekat</i>	A brown ring is formed <i>Cincin perang terbentuk</i>

- 28 The following equation shows the reaction between iron(III) oxide, Fe₂O₃ with carbon monoxide, CO.

Persamaan berikut menunjukkan tindak balas di antara ferum(III) oksida, Fe₂O₃ dengan carbon monoksida, CO.



Which is the correct change for the oxidation number of iron?

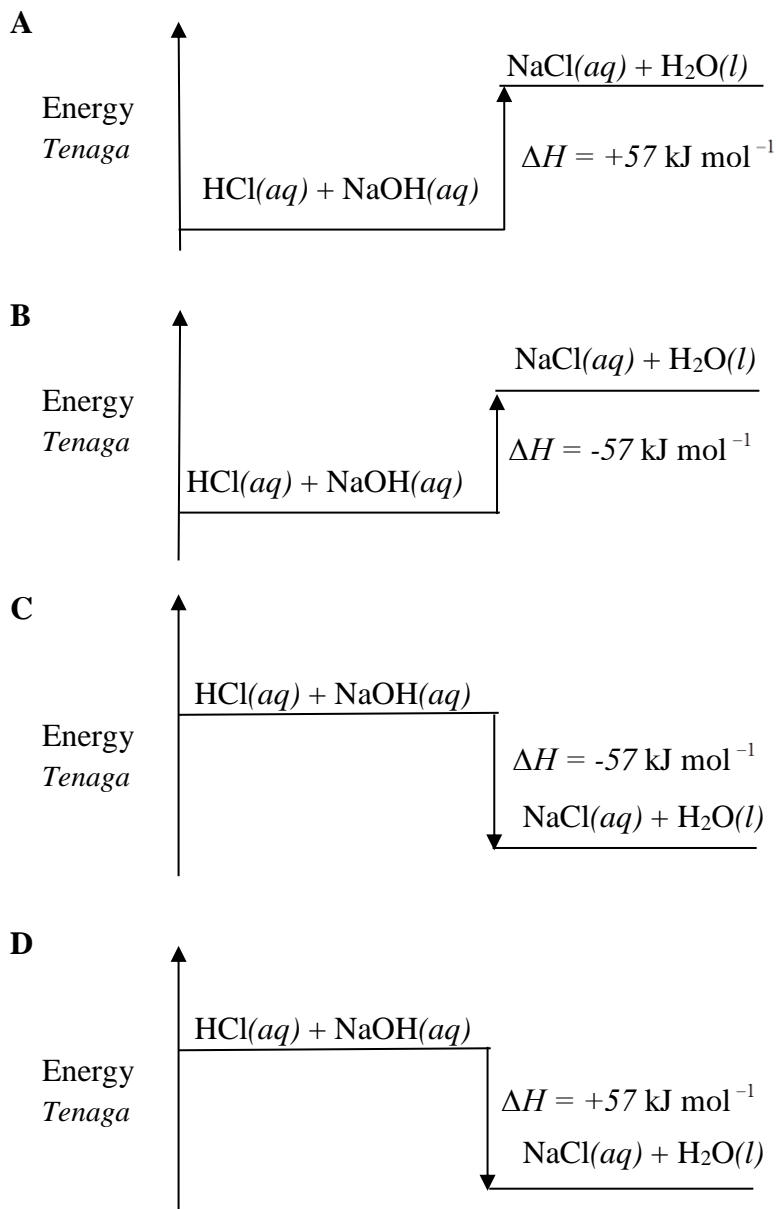
Yang manakah merupakan perubahan nombor pengoksidaan yang betul bagi ferum?

- A** +3 → 0
B +2 → +3
C +3 → +2
D +2 → 0

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- 29 The reaction between hydrochloric acid and sodium hydroxide is an exothermic reaction. The heat of reaction is -57 kJ mol^{-1} . Which of the following energy level diagrams represents the reaction?

Tindak balas antara asid hidroklorik dengan natrium hidroksida adalah tindak balas eksotermik. Haba tindak balas adalah -57 kJ mol^{-1} . Antara gambar rajah aras tenaga berikut yang manakah mewakili tindak balas itu?



- 30 Diagram 9 shows the apparatus set-up of a chemical cell using magnesium and copper as the electrodes.

Rajah 9 menunjukkan susunan radas bagi sel kimia menggunakan magnesium dan kuprum sebagai elektrod.

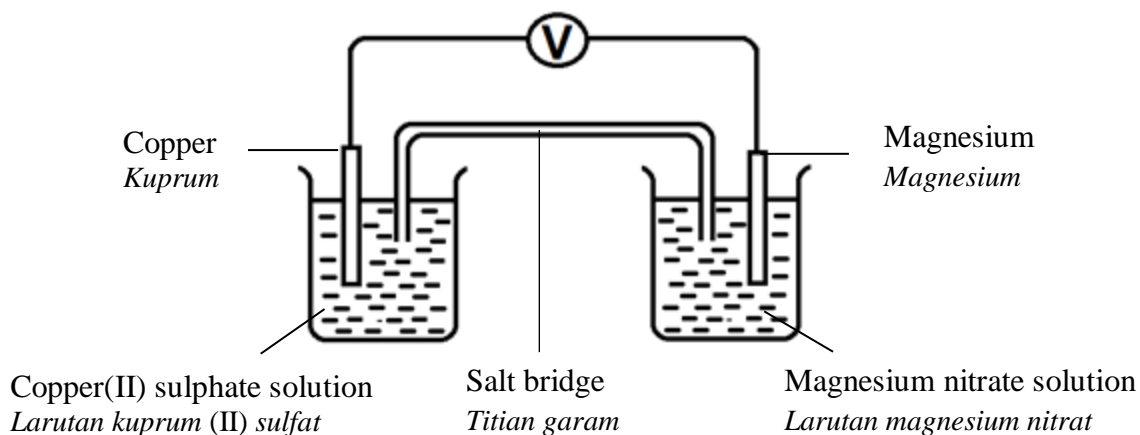


Diagram 9
Rajah 9

Which of the following are the correct products at positive and negative terminal?
Antara berikut, yang manakah hasil-hasil yang betul di terminal positif dan negatif?

	Product at positive terminal <i>Hasil di terminal positif</i>	Product at negative terminal <i>Hasil di terminal negatif</i>
A	Magnesium <i>Magnesium</i>	Copper(II) ion <i>Ion kuprum(II)</i>
B	Copper(II) ion <i>Ion kuprum(II)</i>	Hydrogen gas <i>Gas hidrogen</i>
C	Hydrogen gas <i>Gas hidrogen</i>	Copper <i>Kuprum</i>
D	Copper <i>Kuprum</i>	Magnesium ion <i>Ion magnesium</i>

- 31 Which is the correct match for the name of substance and its chemical formula?
Yang manakah pasangan yang betul untuk nama bahan dan formula kimianya?

	Name of substance <i>Nama bahan</i>	Chemical formula <i>Formula kimia</i>
A	Zinc phosphate <i>Zink fosfat</i>	$Zn_3(PO_4)_2$
B	Aluminium phosphate <i>Aluminium fosfat</i>	$Al_2(PO_4)_3$
C	Lead(II) oxide <i>Plumbum(II) oksida</i>	PbO_2
D	Copper(I) carbonate <i>Kuprum(I) karbonat</i>	$CuCO_3$

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- 32 Diagram 10 shows electrolysis of 1.0 mol dm^{-3} sodium chloride using carbon electrodes.
Rajah 10 menunjukkan elektrolisis natrium klorida 1.0 mol dm^{-3} menggunakan elektrod karbon.

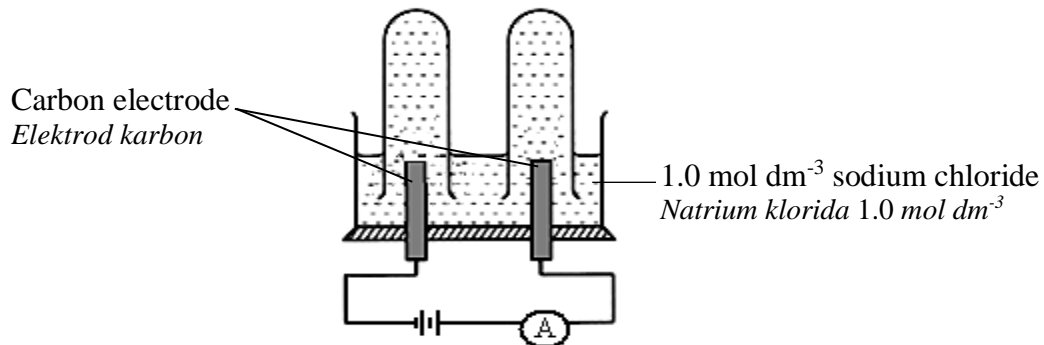


Diagram 10
Rajah 10

Which of the following will be observed at anode and cathode after 5 minutes?
Antara berikut yang manakah pemerhatian di anod dan katod selepas 5 minit?

	Anode <i>Anod</i>	Cathode <i>Katod</i>
A	Colourless gas bubbles released <i>Gelembung gas tanpa warna terbebas</i>	Colourless gas bubbles released <i>Gelembung gas tanpa warna terbebas</i>
B	Colourless gas bubbles released <i>Gas tanpa warna terbebas</i>	Grey solid deposited <i>Pepejal kelabu terenap</i>
C	Greenish- yellow gas bubbles released <i>Gelembung gas kuning kehijauan terbebas</i>	Grey solid deposited <i>Pepejal kelabu terenap</i>
D	Greenish- yellow gas bubbles released <i>Gelembung gas kuning kehijauan terbebas</i>	Colourless gas bubbles released <i>Gelembung gas tanpa warna terbebas</i>

- 33 Diagram 11 shows curve S which is obtained when excess granulated zinc is reacted with 50 cm^3 of 1.0 mol dm^{-3} nitric acid.
Rajah 11 menunjukkan lengkung S yang diperolehi apabila ketulan zink berlebihan bertindak balas dengan 50 cm^3 asid nitrik 1.0 mol dm^{-3} .

Volume of hydrogen gas (cm^3)
Isipadu gas hidrogen (cm^3)

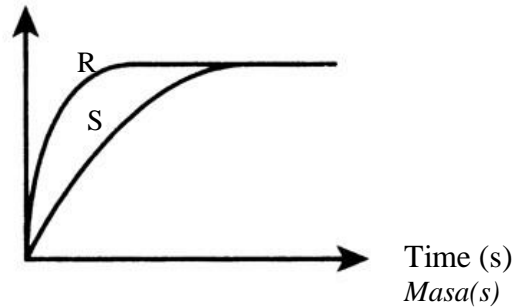


Diagram 11
Rajah 11

Which of the following reactions produces curve R?

Antara tindak balas berikut yang manakah menghasilkan lengkung R?

- A** Excess zinc powder + 50 cm^3 of 2.0 mol dm^{-3} nitric acid
Serbuk zink berlebihan + 50 cm^3 asid nitrik 2.0 mol dm^{-3}
- B** Excess zinc powder + 50 cm^3 of 1.0 mol dm^{-3} of nitric acid
Serbuk zink berlebihan + 50 cm^3 asid nitrik 1.0 mol dm^{-3}
- C** Excess granulated zinc + 100 cm^3 of 1.0 mol dm^{-3} of nitric acid
Ketulan zink berlebihan + 100 cm^3 asid nitrik 1.0 mol dm^{-3}
- D** Excess granulated zinc + 50 cm^3 of 2.0 mol dm^{-3} of nitric acid
Ketulan zink berlebihan + 50 cm^3 asid nitrik 2.0 mol dm^{-3}

- 34 Which of the following shows the correct value for the heat of combustion of alcohols?

Antara berikut, yang manakah menunjukkan nilai yang betul bagi haba pembakaran alkohol?

	Ethanol , C ₂ H ₅ OH <i>Etanol</i>	Propanol , C ₃ H ₇ OH <i>Propanol</i>	Butanol , C ₄ H ₉ OH <i>Butanol</i>
A	-2015 kJ mol ⁻¹	-1376 kJ mol ⁻¹	-725 kJ mol ⁻¹
B	-2015 kJ mol ⁻¹	-2676 kJ mol ⁻¹	-725 kJ mol ⁻¹
C	-2676 kJ mol ⁻¹	-725 kJ mol ⁻¹	-1376 kJ mol ⁻¹
D	-1376 kJ mol ⁻¹	-2015 kJ mol ⁻¹	-2676 kJ mol ⁻¹

- 35 Table 3 shows the pH value of two solutions with the same concentration.
Jadual 3 menunjukkan nilai pH bagi dua larutan dengan kepekatan yang sama.

Solution <i>Larutan</i>	pH
K	8
L	12

Table 3
Jadual 3

Which statement explains the differences in the pH values?

Pernyataan manakah yang menerangkan perbezaan antara nilai pH itu?

- A** K ionises partially whereas L ionizes completely in water.
K mengion separa manakala L mengion lengkap di dalam air
- B** The concentration of hydroxide ion in K is higher than L.
Kepekatan ion hidroksida dalam K lebih tinggi berbanding L
- C** The number of mole of hydroxide ion in K is less than L.
Bilangan mol ion hidroksida dalam K kurang berbanding dengan L
- D** The concentration of hydrogen ion in K is lower than L.
Kepekatan ion hidrogen dalam K lebih rendah berbanding L

- 36 Table 4 shows the proton number of elements P, Q and R.
Jadual 4 menunjukkan nombor proton bagi unsur P, Q dan R.

Element <i>Unsur</i>	P	Q	R
Proton number <i>Nombor proton</i>	5	7	12

Table 4
Jadual 4

Which is the correct arrangement in descending order of atomic size of the element?
Susunan menurun saiz atom unsur yang manakah betul?

- A R, Q, P
 B R, P, Q
 C P, Q, R
 D Q, R, P
- 37 Diagram 12 shows the composition of element in a seashell.
Rajah 12 menunjukkan komposisi unsur di dalam cengkerang siput.


 Seashell <i>Cengkerang siput</i>	Element <i>Unsur</i>	Mass (g) <i>Jisim (g)</i>
	M	25.0
	G	7.5
	J	30.0

Diagram 12
Rajah 12

What is the empirical formula of the compound in the seashell?
 [Relative atomic mass: M = 40 ; G = 12 ; J = 16]
Apakah formula empirik bagi sebatian dalam cengkerang siput tersebut?
 [*Jisim atom relatif* : M = 40 ; G = 12 ; J = 16]

- A MGJ
 B MG₂J
 C MGJ₂
 D MGJ₃

[*Lihat halaman sebelah*
 SULIT

- 38 Diagram 13 shows the formation of compound V when compound S reacts with compound T under reflux.

Rajah 13 menunjukkan penghasilan sebatian V apabila sebatian S bertindak balas dengan sebatian T secara refluks.

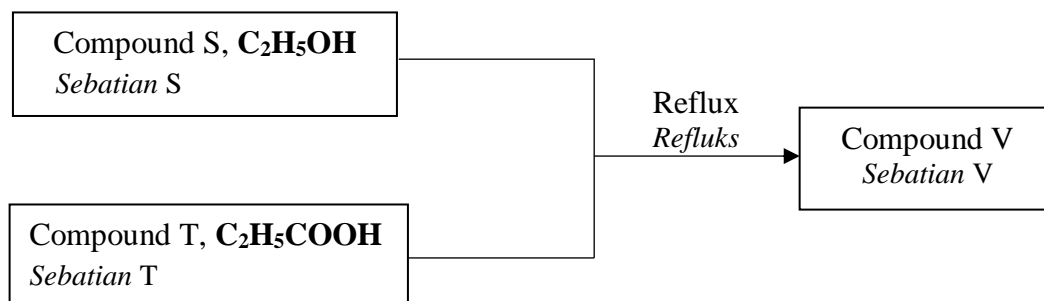


Diagram 13
Rajah 13

Which of the following shows the correct structural formula and name for compound V?

Antara set berikut yang manakah mewakili sebatian V?

	Structural formula <i>Formula struktur</i>	Name <i>Nama</i>
A	$ \begin{array}{ccccccc} & \text{H} & \text{O} & & \text{H} & \text{H} & \text{H} \\ & & & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{O} & - \text{C} & - \text{C} & - \text{C} - \text{H} \\ & & & & & & \\ & \text{H} & & & \text{H} & \text{H} & \text{H} \end{array} $	Ethyl propanoate <i>Etil propanoat</i>
B	$ \begin{array}{ccccccc} & \text{H} & \text{H} & \text{O} & & \text{H} & \text{H} \\ & & & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{C} & - \text{O} & - \text{C} & - \text{C} - \text{H} \\ & & & & & & \\ & \text{H} & \text{H} & & & \text{H} & \text{H} \end{array} $	Ethyl propanoate <i>Etil propanoat</i>
C	$ \begin{array}{ccccccc} & \text{H} & \text{O} & & \text{H} & \text{H} & \text{H} \\ & & & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{O} & - \text{C} & - \text{C} & - \text{C} - \text{H} \\ & & & & & & \\ & \text{H} & & & \text{H} & \text{H} & \text{H} \end{array} $	Propyl propanoate <i>Propil propanoat</i>
D	$ \begin{array}{ccccccc} & \text{H} & \text{H} & \text{O} & & \text{H} & \text{H} \\ & & & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{C} & - \text{O} & - \text{C} & - \text{C} - \text{H} \\ & & & & & & \\ & \text{H} & \text{H} & & & \text{H} & \text{H} \end{array} $	Propyl propanoate <i>Propil propanoat</i>

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- 39 Sodium silicate, Na_2SiO_3 is one of the compound in glass.
What is the oxidation number of silicon in Na_2SiO_3 ?
Natrium silikat, Na_2SiO_3 merupakan salah satu sebatian dalam kaca. Apakah nombor pengoksidaan bagi unsur silikon dalam Na_2SiO_3 .
- A -2
B +3
C +4
D +5
- 40 Diagram 14 shows four iron nails placed in four separate test tubes containing hot jelly solution and potassium hexacyanoferrate(III) solution.
Rajah 14 menunjukkan empat paku besi yang diletakkan dalam empat tabung uji berbeza yang mengandungi larutan agar-agar panas dan larutan kalium heksasianoferat(III).

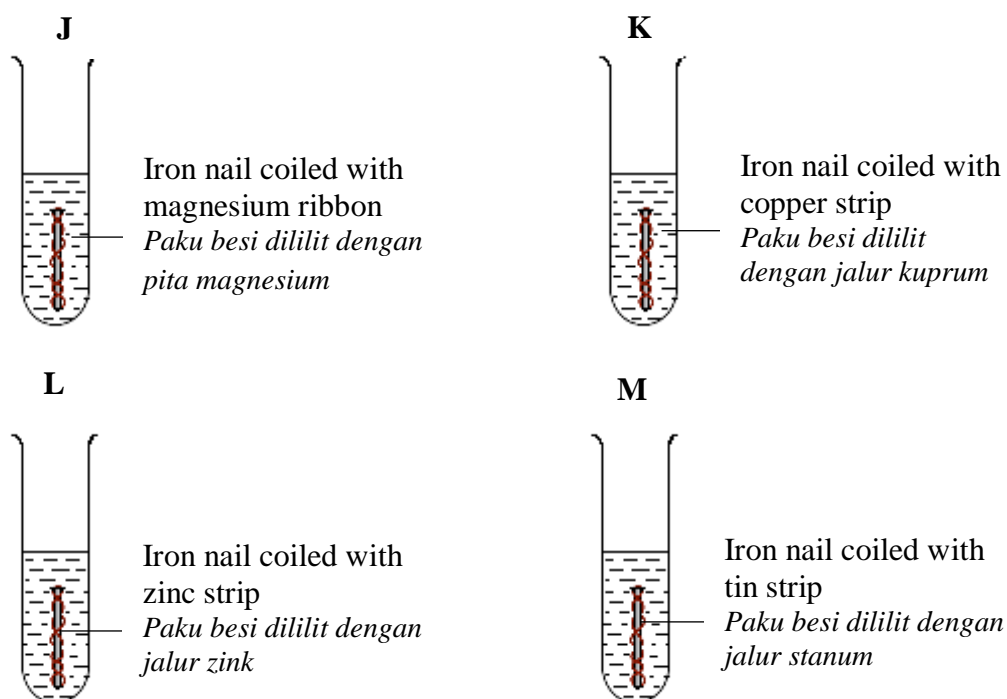


Diagram 14
Rajah 14

Which test tube shows the highest intensity of blue colouration?
Tabung uji yang manakah menunjukkan keamatan warna biru yang paling tinggi?

- A Test tube J
Tabung uji J
- B Test tube K
Tabung uji K
- C Test tube L
Tabung uji L
- D Test tube M
Tabung uji M

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- 41 Diagram 15 shows a glass N with its properties.
Rajah 15 menunjukkan sebiji gelas dan sifat-sifatnya.



Glass N
Gelas N

As decorative glassware
Barangan kaca hiasan
Have high refractive index
Indeks biasan tinggi
High density
Berketumpatan tinggi
Glittering appearance
Berkilau

Diagram 15
Rajah 15

What is glass N?
Apakah kaca N?

- A Lead glass
Kaca plumbum
- B Fused glass
Kaca terlakur
- C Soda-lime glass
Kaca soda kapur
- D Borosilicate glass
Kaca borosilikat

- 42 Diagram 16 shows a sample of sweets with its ingredients which loved by kids.
Rajah 16 menunjukkan suatu sampel gula-gula dan kandungannya yang digemari oleh kanak-kanak.

**Ingredient :**

Sugar, fat, milk powder, cocoa powder, permitted flavor

Kandungan:

Gula, lemak, serbuk susu, serbuk koko, perisa yang dibenarkan

Diagram 16

Rajah 16

What is the long-term effect to the kids after eating too much sweets?

Apakah kesan jangka panjang kepada kanak-kanak selepas memakan terlalu banyak gula-gula?

- A** Asthma
Lelah
- B** Hair loss
Rambut gugur
- C** Hyperactive
Hiperaktif
- D** Stomach ache
Sakit perut

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- 43 Diagram 17 shows the apparatus set-up to determine the heat of precipitation of silver chloride.

Rajah 17 menunjukkan senarai radas untuk menentukan haba pemendakan argentum klorida.

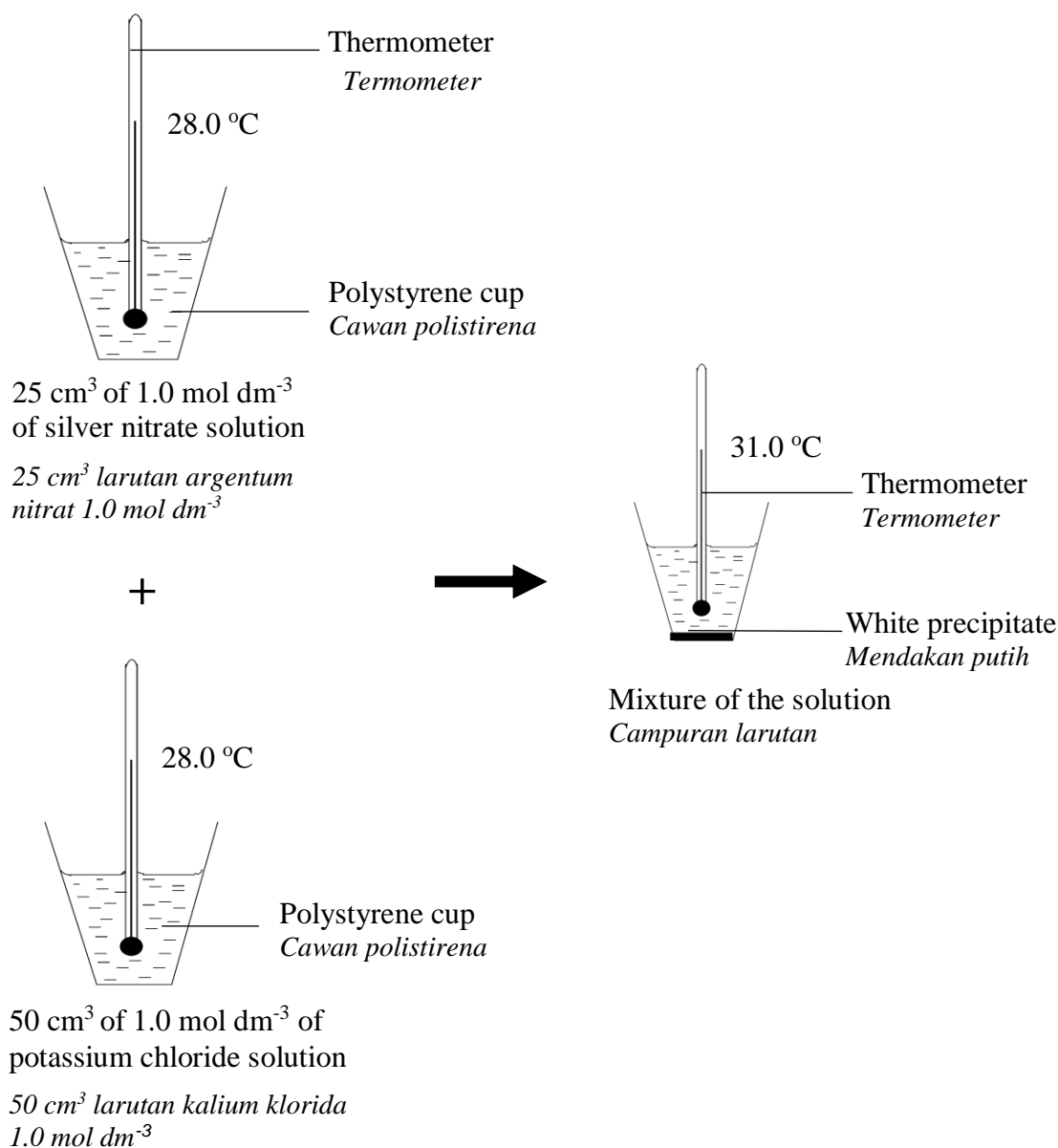


Diagram 17
Rajah 17

What is the heat of precipitation of silver chloride?

Berapakah haba pemendakan bagi argentum klorida?

[Specific heat capacity of solution = 4.2 J g⁻¹ °C⁻¹, density of solution = 1 g cm⁻³]

[Muatan haba tentu larutan = 4.2 J g⁻¹ °C⁻¹, ketumpatan larutan = 1 g cm⁻³]

- A 18.9 kJ mol⁻¹
B 37.8 kJ mol⁻¹
C 18900 kJ mol⁻¹
D 37800 kJ mol⁻¹

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- 44 Table 5 shows the information of a simple chemical cell. The cell consists of metal X and Y as electrodes and sulphuric acid as electrolyte.

Jadual 5 menunjukkan maklumat mengenai satu sel kimia ringkas. Sel ini terdiri daripada logam X dan logam Y sebagai elektrod dan asid sulphurik sebagai elektrolit.

Set Set	Metal X Logam X	Metal Y Logam Y	Positive terminal Terminal positif	Voltage (V) Voltan (V)
I	Magnesium <i>Magnesium</i>	Copper <i>Kuprum</i>	Copper <i>Kuprum</i>	2.4
II	Aluminium <i>Aluminium</i>	Copper <i>Kuprum</i>	Copper <i>Kuprum</i>	2.0
III	Aluminium <i>Aluminium</i>	Iron <i>Ferum</i>	Iron <i>Ferum</i>	1.2
IV	Magnesium <i>Magnesium</i>	Iron <i>Ferum</i>	P	Q

Table 5
Jadual 5

What is electrode **P** and the value of **Q**?

*Apakah elektrod **P** dan nilai **Q**?*

	Electrode P <i>Elektrod P</i>	Value of Q (V) <i>Nilai bagi Q</i>
A	Magnesium <i>Magnesium</i>	0.8
B	Iron <i>Ferum</i>	1.6
C	Magnesium <i>Magnesium</i>	1.6
D	Iron <i>Ferum</i>	0.8

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- 45 Diagram 18 shows a set of kitchen utensils that can withstand high temperature and resistant to corrosion.

Rajah 18 menunjukkan suatu set peralatan dapur yang tahan terhadap suhu tinggi dan tahan karat.



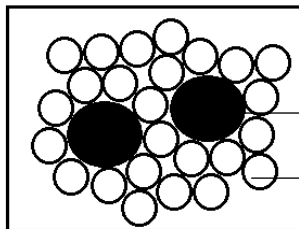
Diagram 18

Rajah 18

Which of the following represent the arrangement of atoms in the materials used to make the kitchen utensils?

Antara berikut, yang manakah menunjukkan susunan atom dalam bahan yang digunakan dalam pembuatan peralatan dapur ini?

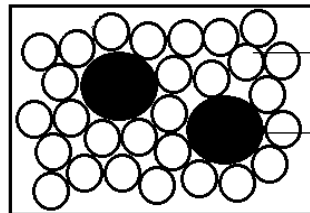
A



Copper
Kuprum

Nickel
Nikel

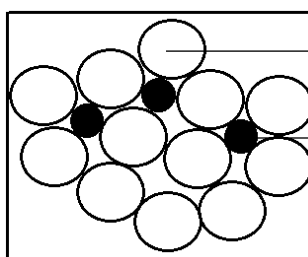
B



Copper
Kuprum

Tin
Stanium

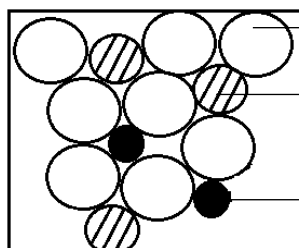
C



Iron
Ferum

Carbon
Karbon

D



Iron
Ferum

Chromium
Kromium

Carbon
Karbon

- 46 Diagram 19 shows the information of a bee sting.
Rajah 19 menunjukkan maklumat sengatan lebah.

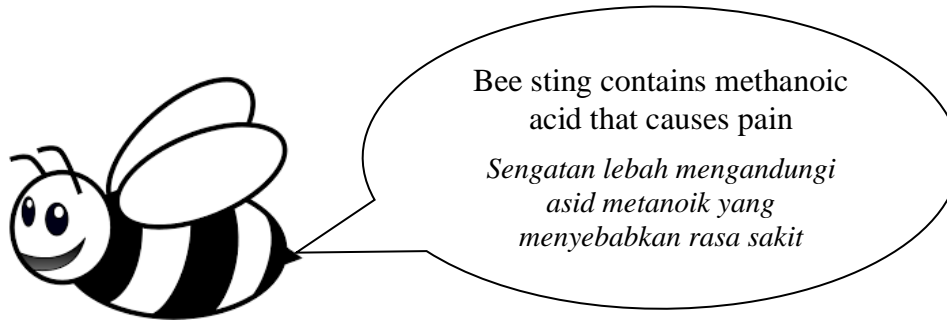


Diagram 19
Rajah 19

A student was quickly treated with sodium bicarbonate after he was stung by a bee. What are the products in the reaction?

Seorang pelajar telah dirawat dengan segera menggunakan natrium bikarbonat setelah disengat oleh seekor lebah.

Apakah hasil daripada tindak balas ini?

- I Water
Air
 - II Methyl bicarbonate
Metil bikarbonat
 - III Sodium methanoate
Natrium metanoat
 - IV Carbon dioxide gas
Gas karbon dioksida
- A I and II
I dan II
 - B II and III
II dan III
 - C I, III and IV
I, III dan IV
 - D II, III and IV
II, III dan IV

- 47 Diagram 20 shows the apparatus set-up for the reaction of metal W with oxygen gas to produce white solid Z. When solid Z is reacted with water, the solution formed turns red litmus paper to blue.

Rajah 20 menunjukkan susunan radas bagi tindak balas antara logam W dengan gas oksigen bagi menghasilkan pepejal putih Z. Apabila pepejal Z bertindak balas dengan air, larutan yang terhasil menukarkan kertas litmus merah kepada biru.

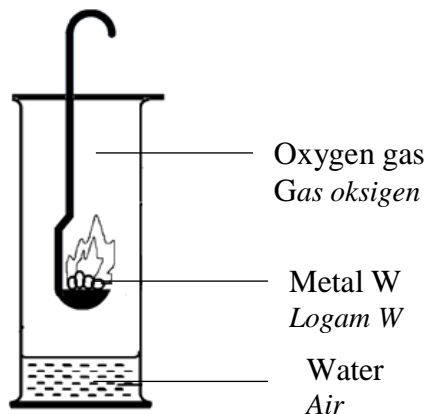


Diagram 20
Rajah 20

Which of the following is correct about metal W and solid Z?

Antara yang berikut, yang manakah betul bagi logam W dan pepejal Z?

[Proton number of oxygen is 8]

[*Nombor proton bagi oksigen ialah 8*]

	Electron arrangement of W atom <i>Susunan elektron bagi atom W</i>	Chemical formula of solid Z <i>Formula kimia pepejal Z</i>
A	2.1	WO
B	2.8.2	W ₂ O
C	2.8.3	W ₂ O ₃
D	2.8.8.1	W ₂ O

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- 48 The following equation represents the decomposition of solid copper(II) nitrate.
Persamaan berikut mewakili tindak balas penguraian pepejal kuprum(II) nitrat



What is the volume of oxygen gas produces at room condition when 1.88 g of solid copper(II) nitrate is decomposed?

Apakah isipadu gas oksigen yang terhasil pada keadaan bilik apabila 1.88 g pepejal kuprum(II) nitrat terurai?

[Relative atomic mass : Cu=64; N=14; O=16 ; Molar volume of gas = 24 dm³ mol⁻¹ at room conditions]

[Jisim atom relatif : Cu=64; N=14; O=16; Isi padu molar bagi gas = 24 dm³ mol⁻¹ pada keadaan bilik]

- A 12 cm³
B 24 cm³
C 120 cm³
D 240 cm³
- 49 What is the concentration of 25 cm³ sulphuric acid, H₂SO₄ needed to neutralise 25 cm³ of 1.0 mol dm⁻³ sodium hydroxide solution, NaOH?
Berapakah kepekatan asid sulfurik, H₂SO₄ yang diperlukan untuk meneutralkan 25 cm³ larutan natrium hidroksida 1.0 mol dm⁻³, NaOH?
- A 0.1 mol dm⁻³
B 0.5 mol dm⁻³
C 1.0 mol dm⁻³
D 2.0 mol dm⁻³

- 50 Diagram 21 shows the electron arrangement for compound TZ.
Rajah 21 menunjukkan susunan elektron dalam sebatian TZ.

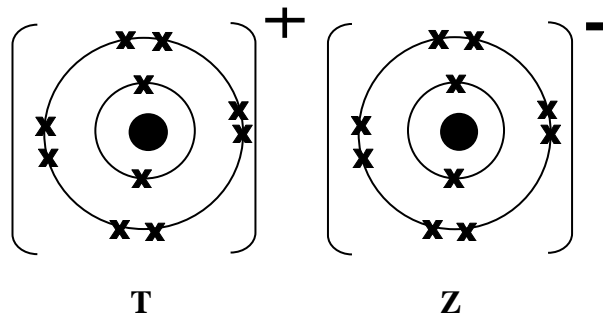


Diagram 21
Rajah 21

Which elements are represented by T and Z?
Unsur manakah yang diwakili oleh T and Z?

	T	Z
A	Sodium <i>Natrium</i>	Oxygen <i>Oksigen</i>
B	Magnesium <i>Magnesium</i>	Oxygen <i>Oksigen</i>
C	Sodium <i>Natrium</i>	Fluorine <i>Florin</i>
D	Magnesium <i>Magnesium</i>	Fluorine <i>Florin</i>

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** and **D**. For each question, choose **one** answer only. Blacken your answer on the objective answer sheet provided.
*Tiap-tiap soalan di ikuti 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.
Sekiranya 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 dilukiskan mengikut skala kecuali dinyatakan.
6. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.