

4541/1
CHEMISTRY
Kertas 1
Ogos
 $1\frac{1}{4}$ jam



MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI SEMBILAN

PROGRAM PENINGKATAN AKADEMIK TINGKATAN 5
SEKOLAH-SEKOLAH NEGERI SEMBILAN 2019

CHEMISTRY

Kertas 1

4541/1

Satu jam lima belas minit

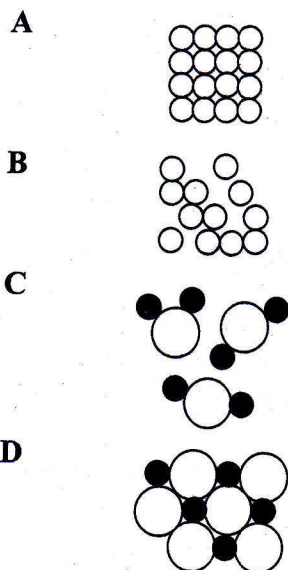
JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

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 28 halaman bercetak

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- 1 Which of the following represents the arrangement of particles in carbon?
Antara berikut, yang manakah mewakili susunan zarah bagi karbon?



- 2 Which of the following is correct about weak acid?
Antara berikut, yang manakah betul tentang asid lemah?

- A Have pH value of 2
Mempunyai nilai pH 2
- B Partially ionised in water
Mengion separa dalam air
- C Does not react with alkali
Tidak bertindak balas dengan alkali
- D Concentration of hydrogen ions is high
Kepekatan ion hidrogen adalah tinggi

- 3 Which of the following is an insoluble salt?
Antara berikut, yang manakah merupakan garam tak terlarutkan?

- A Copper(II) carbonate
Kuprum(II) karbonat
- B Calcium chloride
Kalsium klorida
- C Lead(II) nitrate
Plumbum(II) nitrat
- D Zinc sulphate
Zink sulfat

- 4 Diagram 1 shows the electron arrangement of calcium oxide.
Rajah 1 menunjukkan susunan elektron kalsium oksida.

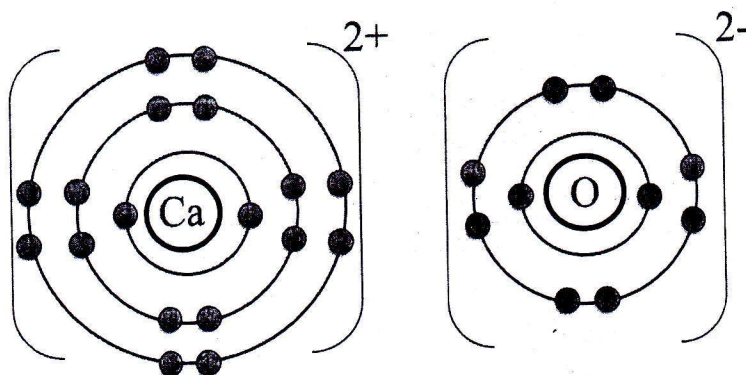


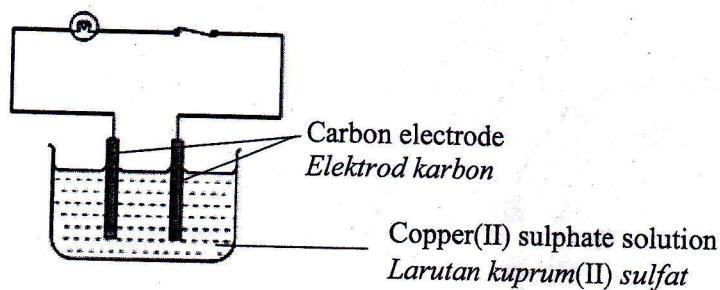
Diagram 1
Rajah 1

Which of the following is correct about calcium oxide?
Antara berikut, yang manakah benar mengenai kalsium oksida?

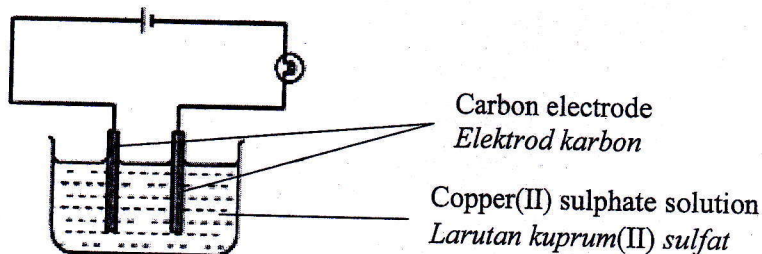
- A Calcium atom shares electrons with oxygen atom
Atom kalsium berkongsi elektron dengan atom oksigen
 - B Calcium atom transfer electron to oxygen atom
Atom kalsium memindahkan elektron kepada atom oksigen
 - C Oxygen atom releases electron
Atom oksigen membebaskan elektron
 - D Calcium atom receives electron
Atom kalsium menerima elektron
- 5 What is the meaning of molecular formula?
Apakah maksud formula molekul?
- A Formula that shows the type of element in the compound
Formula yang menunjukkan jenis unsur dalam sebatian
 - B Formula that shows how the atoms of elements are bonded together
Formula yang menunjukkan bagaimana atom setiap unsur terikat
 - C Formula that shows the simplest ratio of atoms of each element in the compound
Formula yang menunjukkan nisbah teringkas setiap atom unsur dalam sebatian
 - D Formula that shows the actual number of atoms of each element in the compound
Formula yang menunjukkan bilangan sebenar atom setiap unsur dalam sebatian

- 6 Which diagram shows the correct apparatus for Daniell cell?
Rajah manakah yang menunjukkan susunan radas bagi sel Daniell?

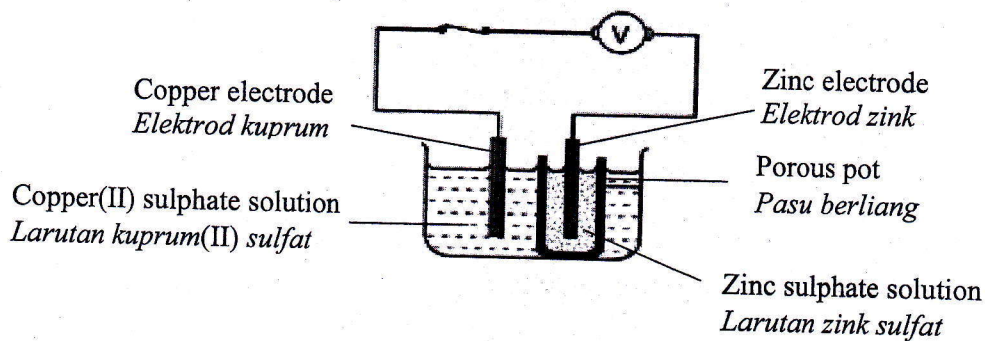
A



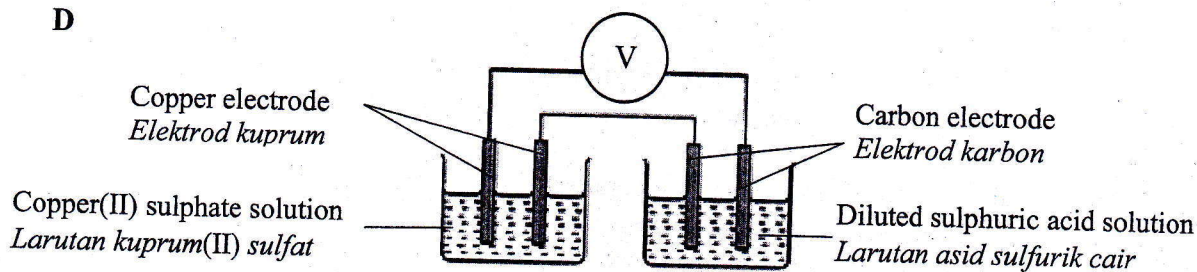
B



C



D



- 7 Sulphuric acid, H_2SO_4 is produced in industry through Contact Process.
What is the catalyst used in the process?
Asid sulfurik, H_2SO_4 dihasilkan dalam industri melalui Proses Sentuh.
Apakah mangkin yang digunakan dalam proses ini?

- A Vanadium(V) oxide
Vanadium(V) oksida
B Copper(II) sulphate
Kuprum(II) sulfat
C Nickel
Nikel
D Iron
Ferum

- 8 Table 1 shows the volume of carbon dioxide gas collected in 3 minutes at a time interval of 30 seconds.
Jadual 1 menunjukkan isi padu gas karbon dioksida yang terkumpul dalam masa 3 minit pada sela masa 30 saat.

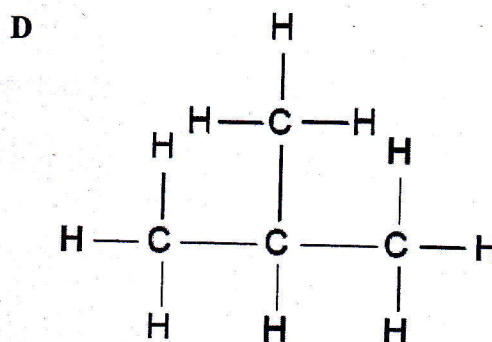
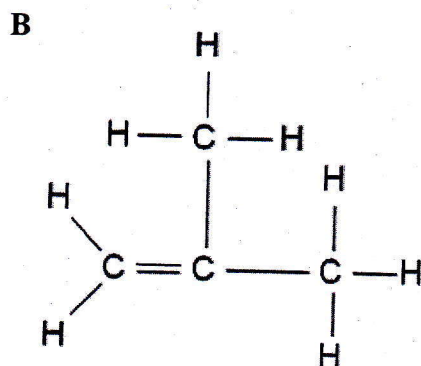
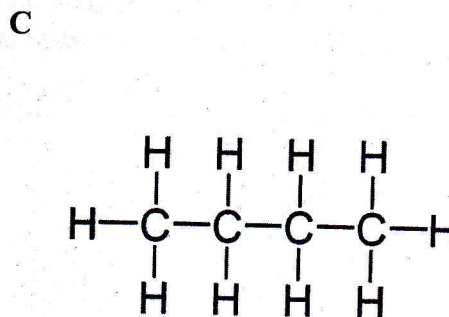
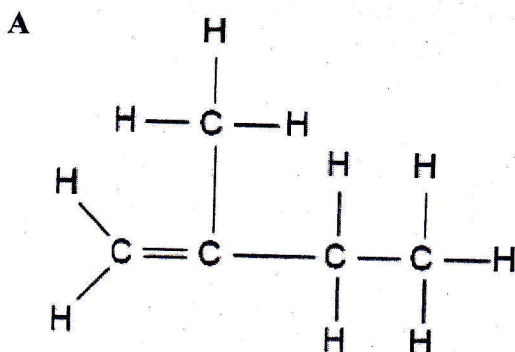
Time / s <i>Masa / s</i>	0	30	60	90	120	150	180
Volume of carbon dioxide / cm^3 <i>Isi padu karbon dioksida / cm^3</i>	0.00	18.00	30.00	39.00	45.00	45.00	45.00

Table 1
Jadual 1

What is the average rate of reaction of the experiment?
Berapakah kadar tindak balas purata eksperimen tersebut?

- A $0.25 \text{ cm}^3\text{s}^{-1}$
B $0.30 \text{ cm}^3\text{s}^{-1}$
C $0.38 \text{ cm}^3\text{s}^{-1}$
D $0.43 \text{ cm}^3\text{s}^{-1}$
- 9 Which of the following occur during oxidation?
Antara berikut, yang manakah berlaku semasa proses pengoksidaan?
- A Loss of oxygen
Kehilangan oksigen
B Gain hydrogen
Menerima hidrogen
C Donates electron
Menderma elektron
D Decrease in oxidation number
Pengurangan nombor pengoksidaan

- 10 Which of the following is the isomer of butene?
Antara berikut, yang manakah isomer bagi butena?



- 11 The following informations were discovered by a scientist.
Maklumat berikut merupakan penemuan oleh seorang saintis.

- The elements are divided into several groups
Unsur-unsur di bahagikan kepada beberapa kumpulan
- Each element in a group has the same chemical properties
Setiap unsur dalam satu kumpulan mempunyai sifat kimia yang sama
- The atomic mass of element in the middle is almost equal to the average atomic mass of two other elements in each of the triads
Jisim atom unsur di tengah hampir sama dengan purata jisim atom dua unsur yang lain dalam setiap triad

Who was the scientist?
Siapakah saintis ini?

- A Antoine Lavoisier
 B Johann Dobereiner
 C John Newlands
 D Lothar meyer

- 12 Diagram 2 shows the energy profile diagram for the reaction between P and Q.
Rajah 2 menunjukkan gambar rajah profil tenaga bagi tindak balas antara P dan Q.

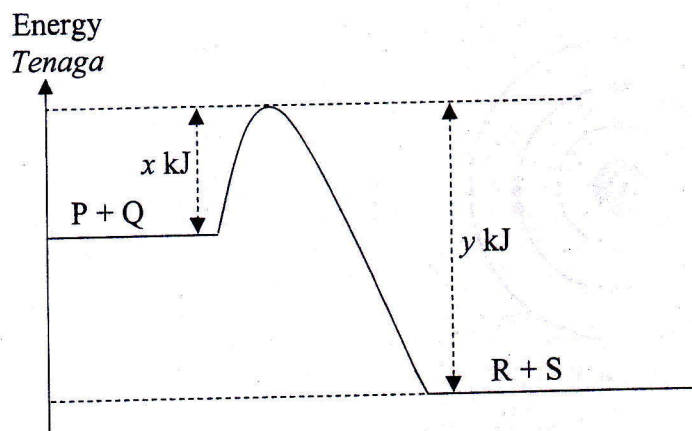


Diagram 2
Rajah 2

The heat of reaction, ΔH for the reaction is $-Z \text{ kJ mol}^{-1}$.
 Which of the following represent the value of Z ?
*Haba tindak balas, ΔH bagi tindak balas adalah $-Z \text{ kJ mol}^{-1}$.
 Antara berikut, yang manakah mewakili nilai Z ?*

- A x
 B y
 C $(x - y)$
 D $(y - x)$
- 13 Which cation present in hard water?
Kation manakah yang hadir di dalam air liat?
- A Mg^{2+}
 B Zn^{2+}
 C Pb^{2+}
 D Sn^{2+}
- 14 Which of the following is correct about electron?
Antara berikut, yang manakah betul mengenai elektron?
- A Neutral subatomic particle
Zarah subatom neutral
 B Has the same mass as proton
Mempunyai jisim yang sama seperti proton
 C Involves in chemical reaction
Terlibat dalam tindak balas kimia
 D Located in the nucleus of an atom
Terletak di dalam nucleus suatu atom

- 15 Diagram 3 shows the electron arrangement of atoms of element X and Y.
Rajah 3 menunjukkan susunan elektron bagi atom bagi unsur X dan Y.

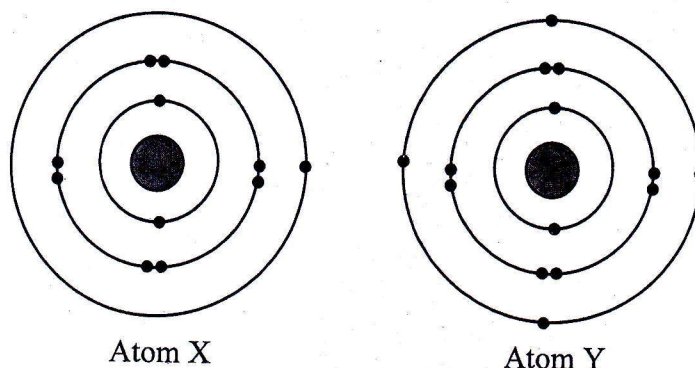


Diagram 3
Rajah 3

These elements are placed in the same period in the Periodic Table of Elements.
 Which of the following explain the statement?

*Unsur-unsur ini terletak pada kala yang sama dalam Jadual Berkala Unsur.
 Antara berikut, yang manakah menerangkan pernyataan ini?*

- A Have the same chemical properties
Mempunyai sifat kimia yang sama
 - B Have three shells filled with electrons
Mempunyai tiga petala berisi elektron
 - C Have eight electrons in their second shell
Mempunyai lapan elektron dalam petala kedua
 - D Have the same number of valence electrons
Mempunyai bilangan elektron valens yang sama
- 16 Which of the following compounds consist of particles that are held by van der Waals forces?
Antara sebatian berikut yang manakah terdiri daripada zarah-zarah yang ditarik oleh daya van der Waals?
- A Silver chloride
Argentum klorida
 - B Ethyl ethanoate
Etil etanoat
 - C Ammonium nitrate
Ammonium nitrat
 - D Sodium methanoate
Natrium metanoat

- 17 Diagram 4 shows the apparatus set-up for electrolysis of X.
Rajah 4 menunjukkan susunan radas bagi elektrolisis X.

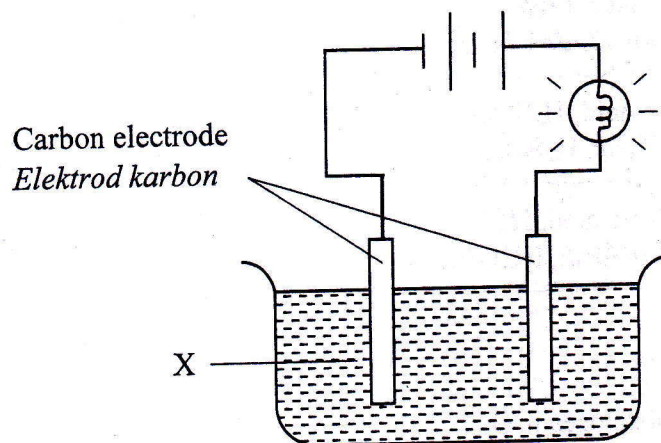


Diagram 4
Rajah 4

Which of the following is X?
Antara berikut, yang manakah X?

- A Sugar solution
Larutan gula
- B Cooking oil
Minyak masak
- C Kerosene
Kerosin
- D Vinegar
Cuka
- 18 Which of the following methods can be used to inhibit rusting?
Antara cara-cara berikut, yang manakah boleh digunakan untuk menghalang pengurangan?
- I Stored in vacuum bag
Disimpan dalam beg vakum
- II Paint the surface of iron
Cat permukaan besi
- III Coil iron with copper strip
Lilit ferum dengan jalur kuprum
- IV Immerse iron in alkaline solution
Merendamkan ferum di dalam larutan beralkali
- A I and II
I dan II
- B I and III
I dan III
- C II and IV
II dan IV
- D III and IV
III dan IV

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- 19 Table 2 shows the observations for two chemical reactions.
Jadual 2 menunjukkan pemerhatian bagi dua tindak balas kimia.

Reaction <i>Tindak balas</i>	Reactant <i>Bahan Tindak balas</i>	Observation <i>Pemerhatian</i>
I	Sulphuric acid, H_2SO_4 and Q <i>Asid sulfurik, H_2SO_4 dan Q</i>	White precipitate is formed <i>Mendakan putih terbentuk</i>
II	Hydrochloric acid, HCl and Q <i>Asid hidroklorik, HCl dan Q</i>	Colourless solution is produced <i>Larutan tanpa warna terbentuk</i>

Table 2
Jadual 2

Which of the following substances is Q?
Antara bahan berikut, yang manakah Q?

- A Silver nitrate
Argentum nitrat
 - B Barium nitrate
Barium nitrat
 - C Lead(II) nitrate
Plumbum(II) nitrat
 - D Copper(II) nitrate
Kuprum nitrat
- 20 The following shows a statement about Contact Process.
Berikut menunjukkan satu pernyataan tentang Proses Sentuh.

In Contact Process, sulphur trioxide gas is not directly flowed into water to form sulphuric acid.
Dalam Proses Sentuh, gas sulfur trioksida tidak dialir terus ke dalam air untuk membentuk asid sulfurik.

Which of the following explains the above statement?
Antara berikut, yang manakah menerangkan pernyataan di atas?

- A The reaction requires higher activation energy
Tindak balas tersebut memerlukan tenaga pengaktifan yang lebih tinggi
- B The concentration of sulphuric acid produced is lower
Kepekatan asid sulfurik yang dihasilkan adalah lebih rendah
- C The reaction is highly exothermic and may produce acidic vapour
Tindak balas tersebut sangat eksotermik dan mungkin menghasilkan wap berasid
- D Sulfur trioxide gas is more soluble in concentrated sulphuric acid than water
Gas sulfur trioksida lebih larut dalam asid sulfurik pekat berbanding air

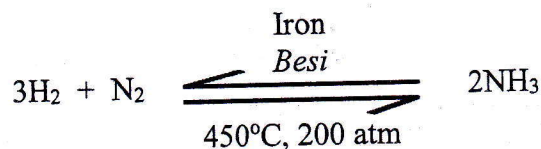
- 21 Which of the following reactions is a slow reaction?
Antara berikut, yang manakah tindak balas perlahan?

A Neutralization
Peneutralan
B Precipitation
Pemendakan
C Combustion
Pembakaran
D Rusting
Pengaratan

- 22 Which substances prevent coagulation of latex?
Antara bahan berikut, yang manakah menghalang penggumpalan lateks?

A Sodium chloride solution
Larutan natrium klorida
B Ammonia solution
Larutan ammonia
C Ethyl ethanoate
Etil etanoat
D Ethanol
Etanol

- 23 The following is the chemical equation of Haber Process.
Berikut ialah persamaan kimia bagi Proses Haber.



What is the function of iron in the process?
Apakah fungsi besi dalam proses itu?

- A To increase the quantity of ammonia
Untuk meningkatkan kuantiti ammonia
B To decrease the temperature used in the process
Untuk mengurangkan suhu yang digunakan dalam proses itu
C To decrease the amount of hydrogen and nitrogen used in the reaction
Untuk mengurangkan jumlah hidrogen dan nitrogen yang digunakan dalam tindak balas
D To increase the effective collision of hydrogen and nitrogen in the process
Untuk meningkatkan perlanggaran berkesan hidrogen dan nitrogen dalam proses itu

- 24 Diagram 5 shows the observation of an experiment.
Rajah 5 menunjukkan pemerhatian bagi satu eksperimen.

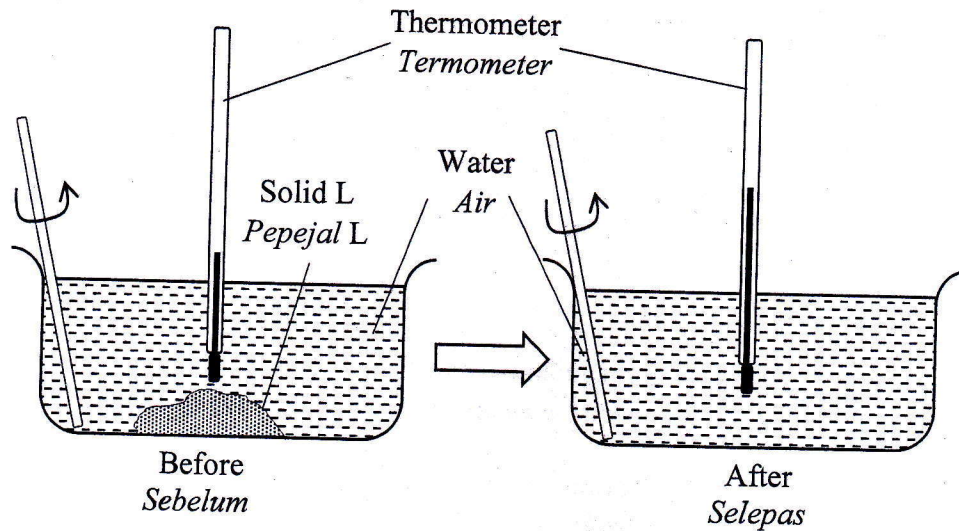


Diagram 5
Rajah 5

What is L?
Apakah L?

- A Sodium chloride
Natrium klorida
 - B Sodium hydroxide
Natrium hidroksida
 - C Ammonium nitrate
Ammonium nitrat
 - D Ammonium chloride
Ammonium klorida
- 25 The effectiveness of cleansing action of soap is lower in hard water compared to in soft water.
 Which of the following explain the above statement?
Keberkesanan tindakan pencucian sabun dalam air liat lebih rendah berbanding dalam air lembut.
Antara berikut, yang manakah menerangkan pernyataan di atas?
- A Soap is less soluble in hard water
Sabun kurang larut dalam air liat
 - B Soap dissociates partially in hard water
Sabun terurai separa lengkap dalam air liat
 - C Soap forms insoluble salt with calcium and magnesium ions
Sabun membentuk garam tidak terlarut dengan ion kalsium dan ion magnesium
 - D Soap particles form complex ions with aluminium ions present in hard water
Zarah sabun membentuk ion kompleks dengan ion aluminium dalam air liat

- 26 Diagram 6 shows the electron arrangement of atom Z.
Rajah 6 menunjukkan susunan elektron bagi atom Z.

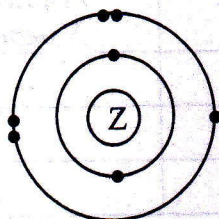
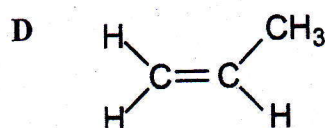
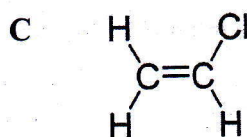
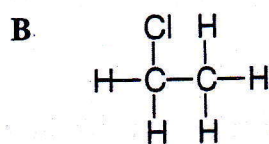
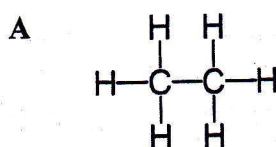


Diagram 6
Rajah 6

How many protons are there in the nucleus of atom Z?
Berapakah bilangan proton yang terdapat dalam nukleus atom Z?

- A 2
B 3
C 5
D 7
- 27 A rain coat is made from a synthetic polymer, polyvinyl chloride.
Which of the following is the structural formula of the monomer?
Baju hujan diperbuat daripada polimer sintetik, polivinil klorida.
Antara berikut, yang manakah formula struktur monomer tersebut?



- 28 Table 3 shows the proton number of elements X, Y and Z.
Jadual 3 menunjukkan nombor proton unsur X, Y dan Z.

Element <i>Unsur</i>	Proton number <i>Nombor proton</i>
X	3
Y	11
Z	19

Table 3
Jadual 3

Which of the following is true about the elements?

Antara berikut, yang manakah benar tentang unsur-unsur tersebut?

- A The size of X atom is the largest followed by Y and Z
Saiz atom X adalah terbesar diikuti oleh Y dan Z
- B Have same number of shells occupied with electrons
Mempunyai bilangan petala berisi electron yang sama
- C The reactivity decreases in the order of X, Y and Z
Kereaktifan semakin berkurang dalam turutan X, Y dan Z
- D Reacts with oxygen gas to form basic oxide
Bertindak balas dengan gas oksigen untuk membentuk oksida bes
- 29 Table 4 shows the proton number for six types of element P, Q, R, S, T and U.
Jadual 4 menunjukkan nombor proton bagi enam jenis unsur P, Q, R, S, T dan U.

Element <i>Unsur</i>	P	Q	R	S	T	U
Proton number <i>Nombor proton</i>	1	6	8	11	12	17

Table 4
Jadual 4

Which of the following pairs of element can conduct electricity current in aqueous solution?

Antara pasangan unsur berikut, yang manakah boleh mengkonduksi elektrik dalam keadaan larutan akueus?

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

- 30 Diagram 7 shows a structural formula of compound X.
Rajah 7 menunjukkan formula struktur bagi sebatian X.

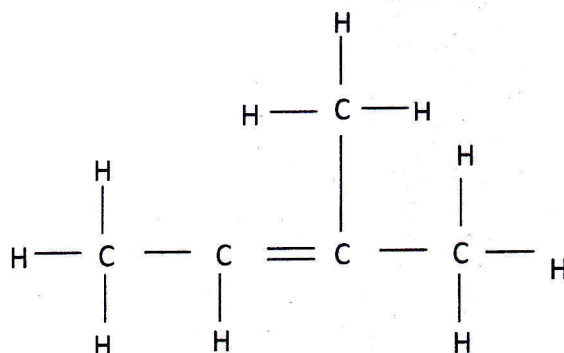


Diagram 7
Rajah 7

What is the name of the compound X?
Apakah nama bagi sebatian X?

- | | | | |
|----------|---|----------|---|
| A | 2-methylbut-2-ene
2-metilbut-2-ena | C | 3-methylbut-2-ene
3-metilbut-2-ena |
| B | 2-methylpent-2-ene
2-metilpent-2-ena | D | 3-methylpent-2-ene
3-metilpent-2-ena |
- 31 Diagram 8 shows an electrolysis of 1.0 mol dm^{-3} solution Y using carbon electrodes.
Rajah 8 menunjukkan elektrosis larutan Y 1.0 mol dm^{-3} dengan menggunakan elektrod karbon.

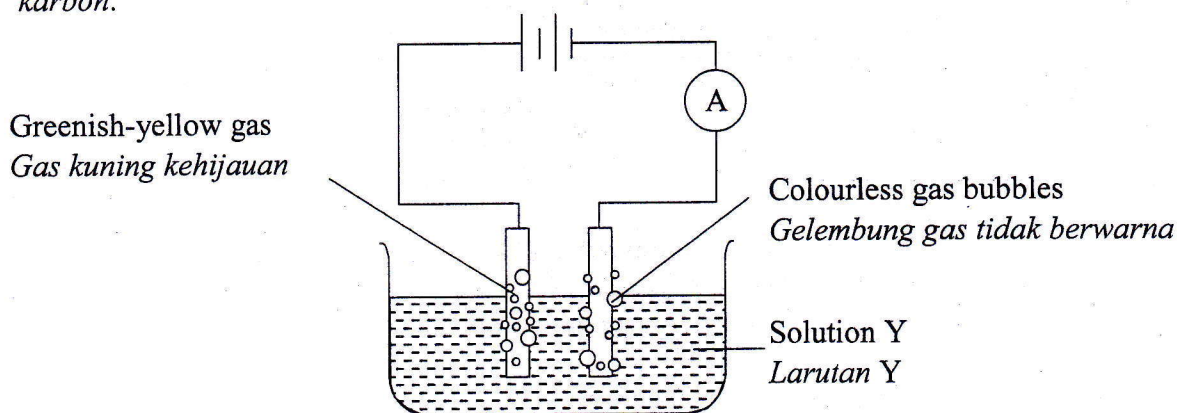


Diagram 8
Rajah 8

Which of the following is solution Y?
Antara berikut, yang manakah larutan Y?

- | | | | |
|----------|------------------------------------|----------|---|
| A | Sodium nitrate
Natrium nitrat | C | Copper(II) nitrate
Kuprum(II) nitrat |
| B | Sodium chloride
Natrium klorida | D | Copper(II) chloride
Kuprum(II) klorida |

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- 32 Heating of X carbonate produces X oxide which is yellow when hot and white when cold. What is X?

Pemanasan X karbonat menghasilkan X oksida yang berwarna kuning semasa panas dan putih semasa sejuk.

Apakah X?

- A Zinc
Zink
- B Lead
Plumbum
- C Silver
Argentum
- D Copper
Kuprum

- 33 Diagram 9 shows several reactions related to acid X.

Rajah 9 menunjukkan beberapa tindak balas berkaitan dengan asid X.

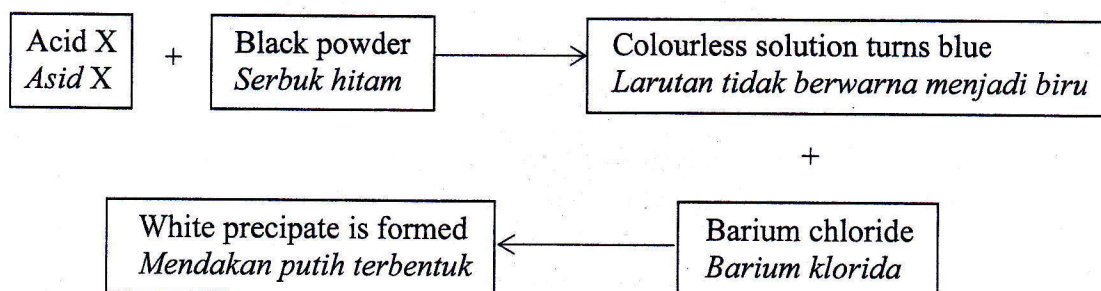


Diagram 9
Rajah 9

Acid X has many uses.

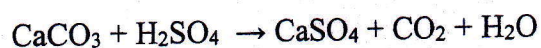
Which of the following is the use of acid X?

Asid X mempunyai banyak kegunaan.

Antara berikut, yang manakah kegunaan asid X?

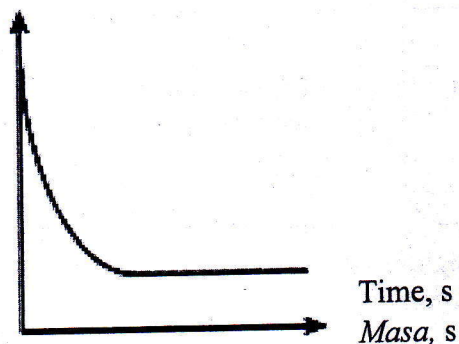
- A Manufacturing of synthetic fibre
Pembuatan gentian sintetik
- B Manufacturing of water pipe
Pembuatan paip air
- C Manufacturing of gelatine
Pembuatan gelatin
- D Manufacturing of soap
Pembuatan sabun

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

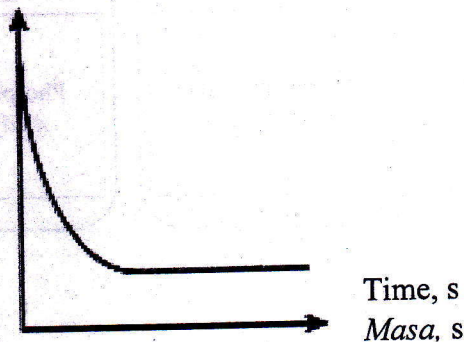


Which of the following graph can show the rate for the reaction?
Antara berikut, graf manakah yang boleh menunjukkan kadar bagi tindak balas ini?

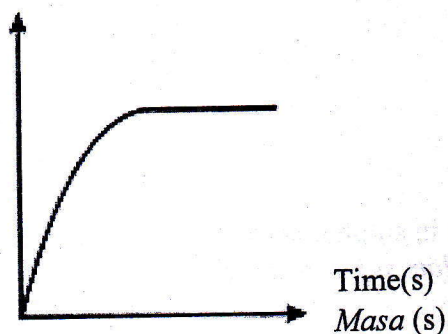
A Mass of CaCO_3 (g)
Jisim CaCO_3 (g)



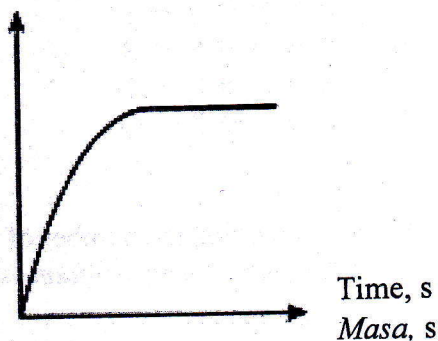
C Volume of CO_2 (cm^3)
Isi padu CO_2 (cm^3)



B Volume of H_2SO_4 (cm^3)
Isi padu H_2SO_4 (cm^3)



D Concentration of H_2SO_4 (mol dm^{-3})
Kepekatan H_2SO_4 (mol dm^{-3})



- 35 Diagram 10 shows four different solutions with the same concentration in a laboratory.
Rajah 10 menunjukkan empat larutan berbeza dengan kepekatan yang sama di dalam makmal.

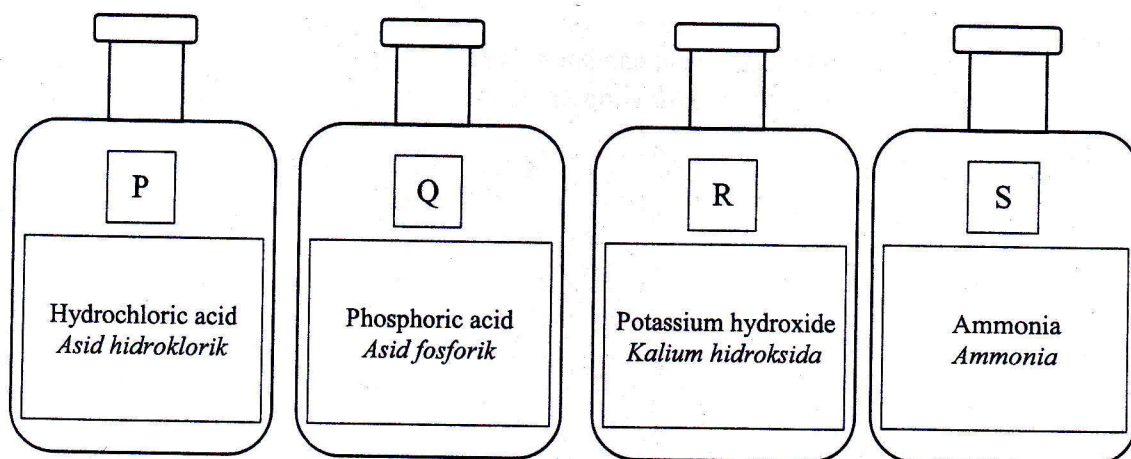


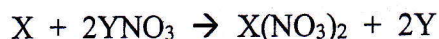
Diagram 10
Rajah 10

Which of the following solutions are arranged in the order of increasing pH values?
Antara larutan berikut, yang manakah disusun secara menaik bagi nilai pH?

- A $P \rightarrow Q \rightarrow R \rightarrow S$
B $P \rightarrow Q \rightarrow S \rightarrow R$
C $S \rightarrow R \rightarrow Q \rightarrow P$
D $R \rightarrow S \rightarrow P \rightarrow Q$
- 36 What is the oxidation number of sulphur in sulphur trioxide?
Apakah nombor pengoksidaan sulfur dalam sulfur trioksida?

- A -6
B -2
C +2
D +6

- 37 The following equation shows the displacement of metal Y from its salt solution.
Persamaan berikut menunjukkan penyesaran logam Y daripada larutan garamnya.



What are metal X and metal Y?

Apakah logam X dan logam Y?

	X	Y
A	Magnesium <i>Magnesium</i>	Silver <i>Argentum</i>
B	Magnesium <i>Magnesium</i>	Zinc <i>Zink</i>
C	Zinc <i>Zink</i>	Magnesium <i>Magnesium</i>
D	Silver <i>Argentum</i>	Magnesium <i>Magnesium</i>

- 38 Diagram 11 shows the ingredients in mango flavoured ice-cream.
Rajah 11 menunjukkan ramuan dalam ais krim berperisa mangga.

Ingredients:

Water, sugar, palm oil, ascorbic acid, stabiliser X, gelatine, ethyl butanoate, Sunset Yellow, mango extract.

Ramuan:

Air, gula, minyak sawit, asid askorbik, penstabil X, gelatin, etil butanoat, 'Sunset Yellow', ekstrak mangga.

Diagram 11

Rajah 11

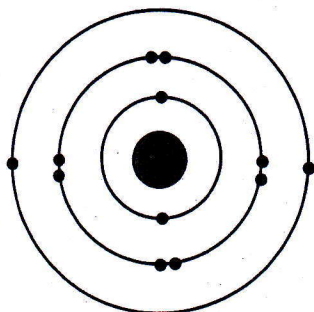
Which of the following is used as stabiliser X?

Antara berikut, yang manakah digunakan sebagai penstabil X?

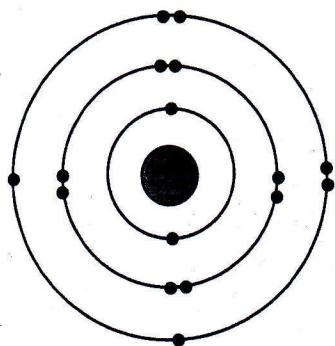
- A Salt
Garam
- B Lecithin
Lesitin
- C Tartrazine
Tartrazin
- D Sodium citrate
Natrium sitrat

- 39 Q^{2-} ion has electron arrangement of 2.8.
Which of the following is the electron arrangement of atom Q?
Ion Q^{2-} mempunyai susunan elektron 2.8.
Antara berikut, yang manakah susunan elektron bagi atom Q?

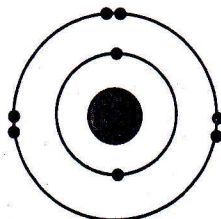
A



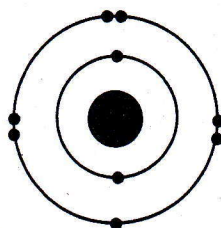
B



C



D



- 40 How many moles of iron(III) ions are there in 16 g of iron(III) oxide?
[Relative atomic mass: O = 16, Fe = 56]
Berapakah bilangan mol ion ferum(III) yang terdapat dalam 16 g ferum(III) oksida?
[Jisim atom relatif: O = 16, Fe = 56]

- A 0.20 mol
B 0.22 mol
C 0.30 mol
D 0.66 mol

- 41 Table 5 shows the result of an experiment to investigate the properties of oxide of elements W, X, Y and Z.

The elements are located in the Period 3 of the Periodic Table of Elements.

Jadual 5 menunjukkan keputusan eksperimen bagi mengkaji sifat oksida W, X, Y dan Z.

Unsur-unsur tersebut terletak dalam Kala 3 Jadual Berkala Unsur.

Oxide of element <i>Oksida unsur</i>	Reaction with hydrochloric acid <i>Tindak balas dengan asid hidroklorik</i>	Reaction with sodium hydroxide solution <i>Tindak balas dengan larutan natrium hidroksida</i>
Oxide of W <i>Oksida W</i>	Oxide of W dissolves <i>Oksida W larut</i>	No change <i>Tiada perubahan</i>
Oxide of X <i>Oksida X</i>	Oxide of X dissolves <i>Oksida X larut</i>	Oxide of X dissolves <i>Oksida X larut</i>
Oxide of Y <i>Oksida Y</i>	No change <i>Tiada perubahan</i>	Oxide of Y dissolves <i>Oksida Y larut</i>
Oxide of Z <i>Oksida Z</i>	Oxide of Z dissolves <i>Oksida Z larut</i>	No change <i>Tiada perubahan</i>

Table 5

Jadual 5

Which of the following elements is the most electronegative?

Antara berikut, yang manakah unsur yang paling elektronegatif?

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

- 42 Y^{3-} ion has 18 electrons. The number of neutron of atom Y is 16.

What is the nucleon number of element Y?

Ion Y^{3-} mempunyai 18 elektron. Bilangan neutron atom Y adalah 16.

Apakah nombor nukleon bagi unsur Y?

- A 15
- B 18
- C 31
- D 34

- 43 Table 6 shows the voltage recorded when a student used copper and iron to build a simple chemical cell.

Jadual 6 menunjukkan nilai voltan yang direkod apabila seorang pelajar menggunakan kuprum dan ferum untuk membina satu sel kimia ringkas.

Metal pair <i>Pasangan Logam</i>	Positive terminal <i>Terminal positif</i>	Negative terminal <i>Terminal negatif</i>	Voltage / V <i>Nilai voltan / V</i>
Fe / Cu	Cu	Fe	0.70

Table 6
Jadual 6

If the student wants to get a greater voltage, which metal is suitable to be used at negative terminal?

Jika pelajar tersebut ingin mendapatkan nilai voltan yang lebih besar, logam yang manakah sesuai digunakan pada terminal negatif?

- I Tin
Stannum
 - II Aluminium
Aluminium
 - III Silver
Argentum
 - IV Magnesium
Magnesium
- 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

- 44 Diagram 12 shows an activity conducted by students of SMK Wawasan.
Rajah 12 menunjukkan satu aktiviti yang dilakukan oleh pelajar-pelajar SMK Wawasan.

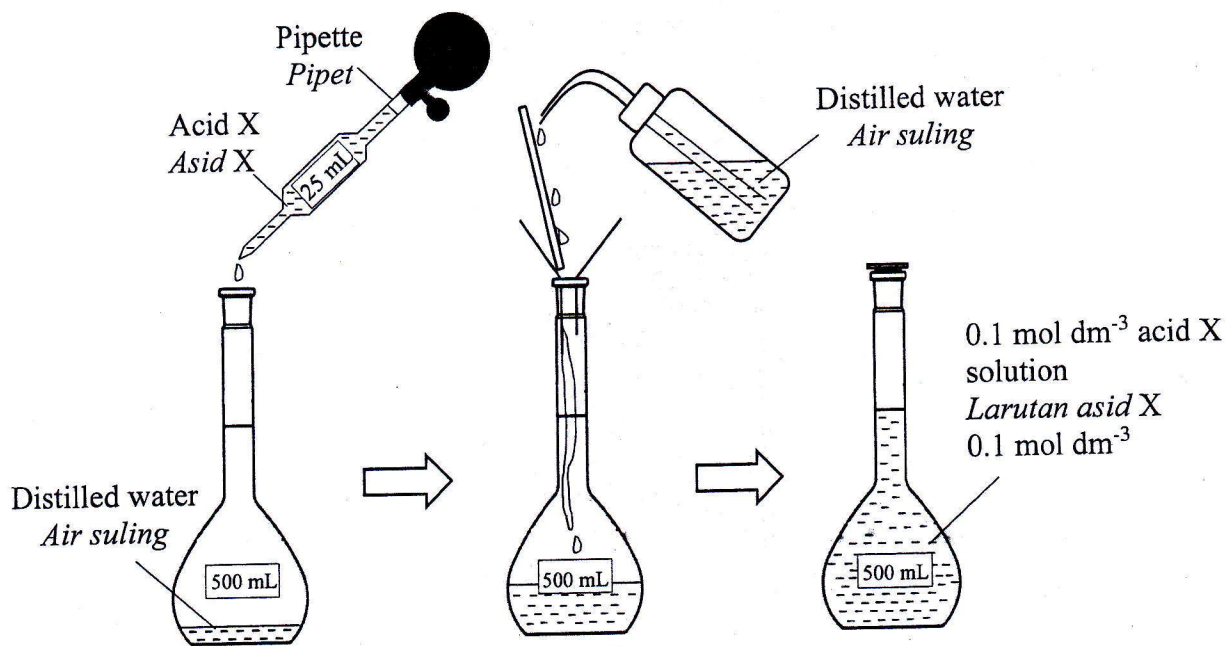


Diagram 12
Rajah 12

What is the concentration of acid X in the pipette?
Berapakah kepekatan asid X di dalam pipet?

- A 0.1 mol dm⁻³
 B 0.2 mol dm⁻³
 C 1.0 mol dm⁻³
 D 2.0 mol dm⁻³
- 45 Excess metal X reacts with 50 cm³ of 1.0 mol dm⁻³ acid Y produces 1.2 dm³ of hydrogen gas.
 Which of the following is the possible chemical equation for this reaction?
 [Relative atomic mass: H:1, Volume of 1 mol of gas in room condition : 24 dm³]
Logam X berlebihan bertindak balas dengan 50 cm³ asid Y 1.0 mol dm⁻³ menghasilkan 1.2 dm³ gas hidrogen.
Antara berikut, yang manakah persamaan kimia yang mungkin untuk tindak balas ini?
 [Jisim atom relatif: H:1, Isipadu 1 mol gas dalam keadaan bilik : 24 dm³]
- A $\text{Mg} + 2\text{HNO}_3 \rightarrow \text{MgCl}_2 + \text{H}_2$
 B $\text{Mg} + \text{H}_2\text{SO}_4 \rightarrow \text{MgSO}_4 + \text{H}_2$
 C $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$
 D $2\text{Al} + 6\text{CH}_3\text{COOH} \rightarrow 2(\text{CH}_3\text{COO})_3\text{Al} + 3\text{H}_2$

- 46 Diagram 13 shows two situations where hot water and cold water are poured in two different beakers containing the same mass of sugar.
Rajah 13 menunjukkan dua situasi di mana air panas dan air sejuk dituangkan ke dalam dua bikar berlainan yang mengandungi jisim gula yang sama.

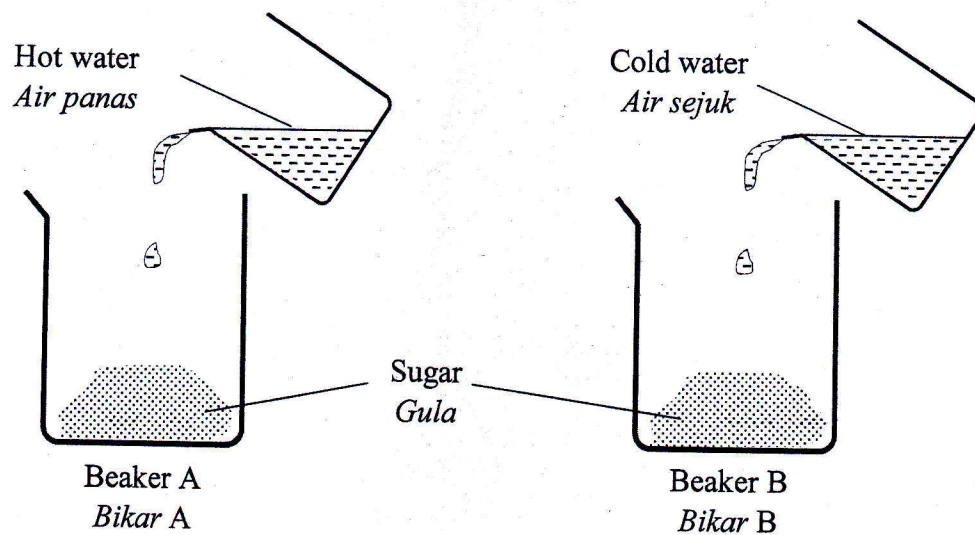


Diagram 13
Rajah 13

Sugar in Beaker A dissolves faster than in Beaker B.

Which of the following statements, explain the situation above?

*Gula di dalam Bikar A melarut dengan lebih cepat berbanding gula dalam Bikar B.
Antara pernyataan berikut, yang manakah menerangkan situasi di atas?*

- A The activation energy is lowered
Tenaga pengaktifan direndahkan
- B The concentration of sugar increases
Kepekatan gula meningkat
- C The number of particles in sugar increase
Bilangan zarah di dalam gula meningkat
- D Kinetic energy of the sugar particles increase
Tenaga kinetic zarah di dalam gula meningkat

- 47 Diagram 14 shows the structural formula of compound X.
Rajah 14 menunjukkan formula struktur bagi sebatian X.

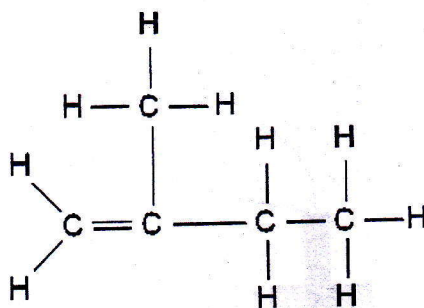


Diagram 14
Rajah 14

What is the percentage of carbon by mass in compound X?

[Relative atomic mass: H = 1, C = 12]

Berapakah peratus jisim karbon dalam sebatian X?

[Jisim atom relatif: H = 1, C = 12]

- A 14.29%
 B 16.67%
 C 68.57%
 D 85.71%
- 48 10.0 g zinc powder is added to 50.0 cm³ of 0.2 mol dm⁻³ copper(II) nitrate solution.
 The temperature of the mixture increases by 15.0 °C.
 What is the heat of displacement of copper by zinc?
 [Relative atomic mass: Zn = 65, Specific heat capacity of a solution = 4.2 J g⁻¹ °C⁻¹]
 10.0 g serbuk zink ditambahkan kepada 50.0 cm³ larutan kuprum(II) nitrat.
 0.2 mol dm⁻³. Suhu campuran meningkat sebanyak 15.0 °C.
 Berapakah haba penyesaran kuprum oleh zink?
 [Jisim atom relatif: Zn = 65, Muatan haba tentu larutan = 4.2 J g⁻¹ °C⁻¹]
- A $\Delta H = +20.45 \text{ kJ mol}^{-1}$
 B $\Delta H = -20.45 \text{ kJ mol}^{-1}$
 C $\Delta H = +315.00 \text{ kJ mol}^{-1}$
 D $\Delta H = -315.00 \text{ kJ mol}^{-1}$

- 49 Diagram 15 shows an experiment carried out to study the transfer of electron at a distance.

Rajah 15 menunjukkan suatu eksperimen yang dijalankan untuk mengkaji pemindahan elektron pada suatu jarak.

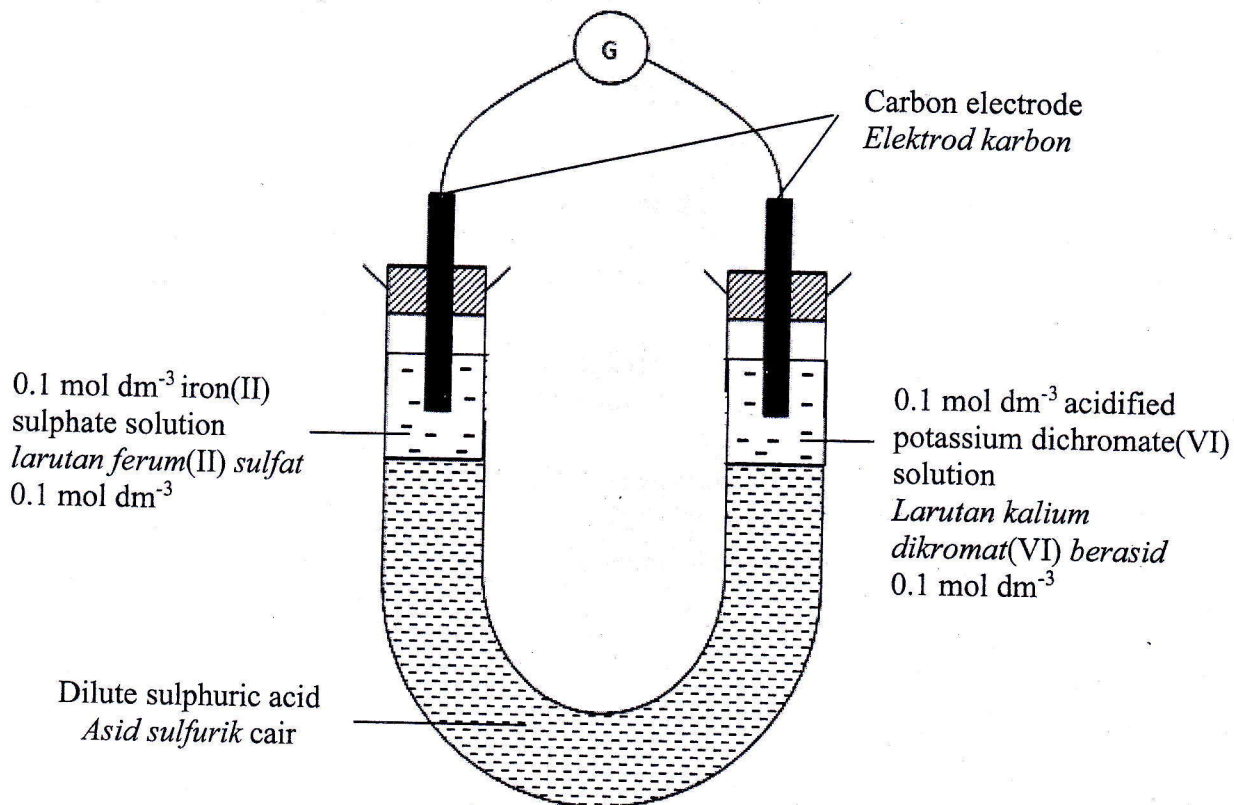


Diagram 15
Rajah 15

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

- A Fe^{2+} ion is reduced
Ion Fe^{2+} diturunkan
- B Acidified potassium dichromate(VI) solution is an reducing agent
Larutan kalium dikromat(VI) berasid ialah agen penurunan
- C Acidified potassium dichromate(VI) solution changes from orange to green
Larutan kalium dikromat(VI) berasid berubah warna dari jingga kepada hijau
- D Electrons are transferred from acidified potassium dichromate(VI) solution to iron(II) sulphate solution
Elektron dipindahkan dari larutan kalium dikromat(VI) berasid kepada larutan ferum(II) sulfat

- 50 Which of the following carbon compound burns to produce the most soot?
[Relative atomic mass: H = 1, C = 12, O = 16]
Antara sebatian karbon berikut, yang manakah terbakar menghasilkan paling banyak jelaga?
[Jisim atom relatif: H = 1, C = 12, O = 16]

- A C_6H_6
- B C_6H_{10}
- C $\text{C}_6\text{H}_{14}\text{O}$
- D $\text{C}_6\text{H}_{12}\text{O}$

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consists of **50** questions.
Kertas soalan ini mengandungi 50 soalan.
2. Answer **all** questions.
*Jawab **semua** soalan.*
3. Each question is followed by four alternative answers, **A, B, C** or **D**. For each question, choose **one** answer only. Blacken your answer on the objective answer sheet provided.
*Tiap-tiap soalan diikuti oleh empat pilihan jawapan, iaitu **A, B, C** dan **D**. Bagi setiap soalan, pilih **satu** jawapan sahaja. Hitamkan jawapan anda pada kertas jawapan objektif yang disediakan.*
4. If you wish to change your answer, erase the blackened mark that you have made. Then blacken the new answer.
Jika anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.
5. The diagrams in the questions 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.