

Nama:.....

Kelas:

4541/1

Kimia

Kertas 1

September 2024

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

JAWATANKUASA PEMUAFAKATAN KURIKULUM DAERAH (KIMIA)
PEJABAT PENDIDIKAN DAERAH MUAR

PEPERIKSAAN PERCUBAAN SPM
2024

KIMIA

Kertas 1

Satu jam lima belas minit

- 1 Antara pernyataan berikut, yang manakah benar tentang kimia?

Which of the following statement is true about chemistry?

- A** Kajian tentang mineral semulajadi dan sifatnya
A study about natural minerals and their properties.
- B** Kajian tentang komposisi, sifat dan perubahan jirim
A study about composition, properties and changes in matter.
- C** Kajian tentang hubungan antara organisma hidup dan bahan kimia.
A study about the relationship between living organism and chemicals.
- D** Kajian tentang pembuatan bahan-bahan kimia baharu.
A study about making of new chemicals.

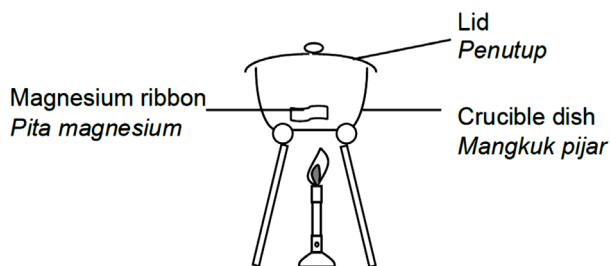
- 2 Bahan manakah merupakan suatu unsur?

Which substance is an element?

- | | |
|----------------------|---------------------------------|
| A Udara / Air | C Karbon/ Carbon |
| B Stim/ Steam | D Naftalena/ Naphthalene |

- 3 Rajah 3 menunjukkan susunan radas untuk menentukan formula empirik bagi suatu oksida logam.

Diagram 3 shows the apparatus set-up to determine the empirical formula of metal oxide.



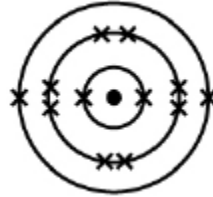
Rajah/ Diagram 3

Antara yang berikut . logam manakah yang menggunakan kaedah yang sama untuk menentukan formula empiriknya?

Which of the following metal uses the same method to determine the empirical formula?

- | | |
|------------------------|---------------------------|
| A Zink
zinc | C Plumbum
Lead |
| B Stanum
Tin | D Kuprum
Copper |

4. Rajah 4 menunjukkan susunan elektron bagi atom M.
Diagram 4 shows the electron arrangement of an atom M.



Rajah /Diagram 4

Antara berikut yang manakah kedudukan unsur M dalam Jadual Berkala Unsur?
Which of the following is the position of element M in the Periodic Table of Elements?

	Kumpulan Group	Kala Period
A	2	2
B	2	3
C	12	2
D	12	3

5. Pernyataan manakah yang paling baik menerangkan ikatan kovalen?
Which statement best explains the formation of covalent bond?
- A** Atom logam berkongsi elektron dengan atom bukan logam
Metal atoms share electrons with non-metal atoms
- B** Atom bukan logam berkongsi elektron dengan atom bukan logam
Non-Metal atoms share electrons with non-metal atoms
- C** Atom logam menderma elektron manakala atom bukan logam menerima elektron
Metal atoms donate electrons while non-metal atom accept electron
- D** Atom bukan logam menderma elektron manakala atom logam menerima elektron
Non-Metal atoms donate electrons while metal atom accepts electron

- 6 Antara berikut bahan manakah bersifat asid?
Which of the following substances is acidic?

- | | |
|--|--|
| A Natrium hidroksida
<i>Sodium hydroxide</i> | C Sulfur dioksida
<i>Sulphur dioxide</i> |
| B Ammonia
<i>Ammonia</i> | D Kalium oksida
<i>Potassium oxide</i> |

- 7 Apakah maksud kadar tindak balas?
What Is the meaning of the rate of reaction?

- A** Pertambahan kuantiti bahan tindak balas
Increase in quantity of reactant
- B** Pengurangan kuantiti hasil tindak balas
Decrease in quantity of product
- C** Pengurangan kuantiti hasil tindak balas dengan masa
Decrease in quantity of product against time
- D** Pertambahan kuantiti hasil tindak balas dengan masa
Increase in quantity of product against time

- 8 Namakan getah sintetik yang dapat digunakan untuk menghasilkan tapak kasut
Name a synthetic rubber that can be used to manufacture shoe soles

- A** Neoprena/ *Neoprene*
- B** Getah nitril/ *Nitrile rubber*
- C** Getah stirena-butadiena/ *Styrene-butadiene rubber*

- 9 Berapakah nombor pengoksidaan kromium dalam $K_2Cr_2O_7$?
What is the oxidation number of chromium in $K_2Cr_2O_7$?

A	+2	C	+6
B	+4	D	+8

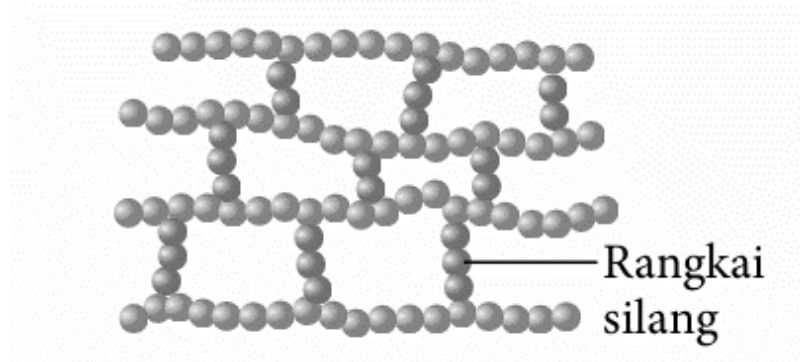
- 10 Antara yang berikut, yang manakah hidrokarbon tepu?
Which of the following is a saturated hydrocarbon

A	Alkana <i>Alkane</i>
B	Alkena <i>Alkene</i>
C	Alkohol <i>Alcohol</i>
D	Asid karboksilik <i>Carboxylic acid</i>

- 11 Antara berikut yang manakah tindak balas cepat?
Which of the following is fast reaction?

I	Pereputan buah/ <i>Fruit decay</i>	III	Nyalaan mancis/ <i>Ignition of matches</i>
II	Pembakaran gas/ <i>Combustion of gases</i>	IV	Penapaian/ <i>Fermentation</i>
A	I dan II <i>I and II</i>	C	I dan IV <i>I and IV</i>
B	II dan III <i>II and III</i>	D	III dan IV <i>III and IV</i>

- 12 Rajah 12 menunjukkan struktur bagi polimer.
Diagram 12 shows a structure of polymer.

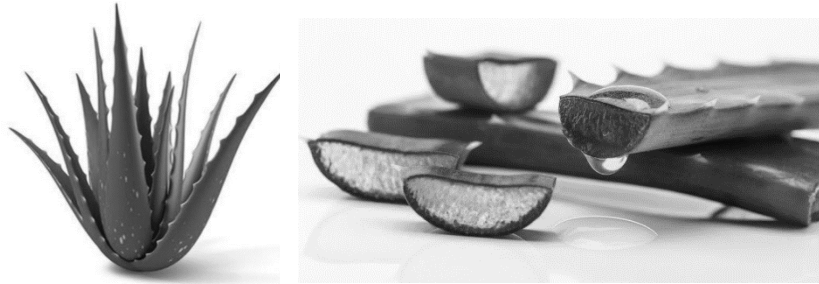


Rajah 12 / Diagram 12

Antara berikut, yang manakah benar tentang polimer dalam Rajah 12
Which of the following is true about the polymer in Diagram 12.

- A Tidak dapat diacu semula selepas dipanaskan
Cannot be remoulded after heating
- B Contoh polimer ini ialah nilon
The example of this polymer is nylon
- C Boleh dibentuk semula selepas dipanaskan
Can be remoulded upon heating
- D Mempunyai sifat elastik yang tinggi
Possess high elasticity

- 13 Rajah 13 menunjukkan sejenis tumbuhan yang boleh dijumpai di kawasan kediaman.
Diagram 13 shows a type of plant that can be found around the housing area.
 Apakah fungsi tumbuhan itu sebagai ubat tradisional?
What is the function of the plant as a traditional medicine?



Rajah/ Diagram 13

- A Mencerahkan kulit.
Brighten the skin
- B Merawat penyakit kulit.
Treat skin disease
- C Menyingkirkan angin dalam badan.
Remove wind from the body
- D Merendahkan tekanan darah dan paras kolestrol
Lower blood pressure and cholesterol level
- 14 Antara yang berikut, bahan manakah yang wujud sebagai molekul pada suhu bilik?
Which of the following substances exist as molecule at room condition?
- | | |
|------------------|--------------------|
| A Iodin/ Iodine | C Karbon/ Carbon |
| B Helium/ Helium | D Kalsium/ Calcium |
- 15 Persamaan kimia manakah yang diseimbangkan dengan betul?
Which chemical equation is correctly balanced?
- A $\text{Ca}(\text{NO}_3)_2 \rightarrow \text{CaO} + 2 \text{NO}_2 + \text{O}_2$
- B $\text{C}_3\text{H}_7\text{OH} + 5\text{O}_2 \rightarrow 3 \text{CO}_2 + 4 \text{H}_2\text{O}$
- C $\text{C}_2\text{H}_5\text{OH} + 3\text{O}_2 \rightarrow 2 \text{CO}_2 + 3 \text{H}_2\text{O}$
- D $\text{Na}_2\text{S}_2\text{O}_3 + 2 \text{HCl} \rightarrow 2 \text{NaCl} + \text{H}_2\text{O} + 2 \text{S} + \text{SO}$

16 Antara berikut yang manakah benar tentang unsur-unsur dalam Jadual Berkala?
Which of the following is true about elements in the Periodic Table?

- A** Sifat kelogaman bertambah apabila merentasi Jadual Berkala dari kiri ke kanan
The metallic properties increases from left to right across a period
- B** Unsur dalam kumpulan yang sama mempunyai sifat fizik yang sama
Elements of the same group have the same physical properties
- C** Unsur kumpulan 18 mempunyai takat lebur dan takat didih yang rendah
Group 18 elements have low melting and boiling points
- D** Unsur kumpulan 17 wujud semulajadi sebagai monoatom
Group 17 elements exist naturally as monoatoms

17 Antara pasangan berikut, yang manakah merupakan tindak balas peneutralan ?
Which of the following reaction is a neutralisation reaction ?

- | | |
|--|--|
| I $\text{HCl} + \text{KOH}$ | III $\text{Zn} + \text{HNO}_3$ |
| II $\text{Pb}(\text{NO}_3)_2 + \text{NaCl}$ | IV $\text{Ca}(\text{OH})_2 + \text{HNO}_3$ |
| A I dan III
<i>I and III</i> | C I , III dan IV
<i>I , III and IV</i> |
| B I dan IV
<i>I and IV</i> | D I , II , III dan IV
<i>I , II , III and IV</i> |

18 Seramik termaju diperbuat daripada sebatian tak organik seperti oksida, karbida dan nitrida. Antara bahan berikut yang manakah diperbuat daripada seramik termaju?
Advanced ceramics are made from inorganic compounds such as oxides, carbides and nitrides. Which of the following is made from advanced ceramics?

A



B



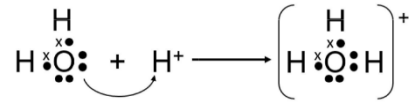
C



D



- 19 Rajah 17 menunjukkan bagaimana suatu ikatan kimia terbentuk.
Diagram 17 shows how a chemical bond is formed.



Rajah / Diagram 17

Antara pernyataan berikut, yang manakah paling tepat mendefinisikan ikatan kimia yang ditunjukkan dalam Rajah 2.

Which of the following statements most accurately defines the chemical bond shown in Diagram 2.

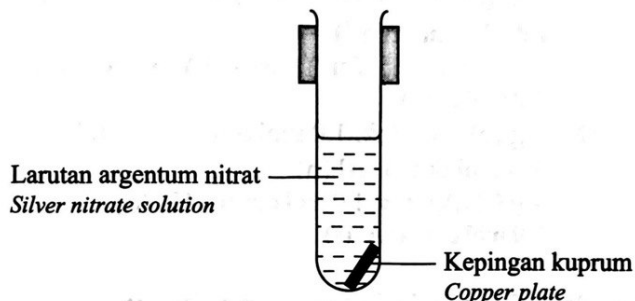
- A** Ikatan yang terbentuk adalah ikatan kovalen yang mana pasangan elektron yang dikongsi berasal dari satu atom sahaja.
The bond formed is a covalent bond which the shared electron pair comes from only one atom.
- B** Ikatan terbentuk melalui pemindahan elektron valens antara molekul dan ion yang bercas positif.
Bonds are formed through the transfer of valence electrons between positively charged molecules and ions.
- C** Ikatan kimia yang terbentuk apabila atom hidrogen tertarik kepada atom yang lebih elektronegatif.
The chemical bond formed hydrogen atom attract to more electronegative atom.
- D** Ikatan kimia yang terbentuk apabila ion hidrogen menderma elektron valens kepada satu molekul air.
The chemical bond formed when hydrogen ion donates valence electron to one molecule of water.

- 20 Antara berikut, pasangan manakah betul tentang kadar tindak balas?
Which of the following pair is correct about the rate of reaction?

	Kadar tindak balas rendah <i>Low rate of reaction</i>	Kadar tindak balas tinggi <i>High rate of reaction</i>
A	Peneutralan antara asid dan alkali <i>Neutralisation between acid and alkali</i>	Kakisan logam <i>Corrosion of metals</i>
B	Penguraian ganda dua antara larutan plumbum(II) nitrat dan larutan natrium iodida <i>Double decomposition between lead(II) nitrate solution and sodium iodide solution</i>	Proses fotosintesis <i>Process photosintesis</i>
C	Kakisan logam <i>Corrosion of metals</i>	Penapaian larutan glukosa <i>Fermentation of glucose solution</i>
D	Penapaian larutan glukosa <i>Fermentation of glucose solution</i>	Penguraian ganda dua antara larutan plumbum(II) nitrat dan larutan natrium iodida <i>Double decomposition between lead(II) nitrate solution and sodium iodide solution</i>

- 21 Rajah 21 menunjukkan susunan radas untuk mengkaji tindak balas penyesaran logam.

Diagram 21 shows the apparatus set up to study the displacement reaction of metal.



Rajah 21 / Diagram 21

Apakah pemerhatian bagi tindak balas dalam Rajah 21?

What is the observation for the reaction in Diagram 21?

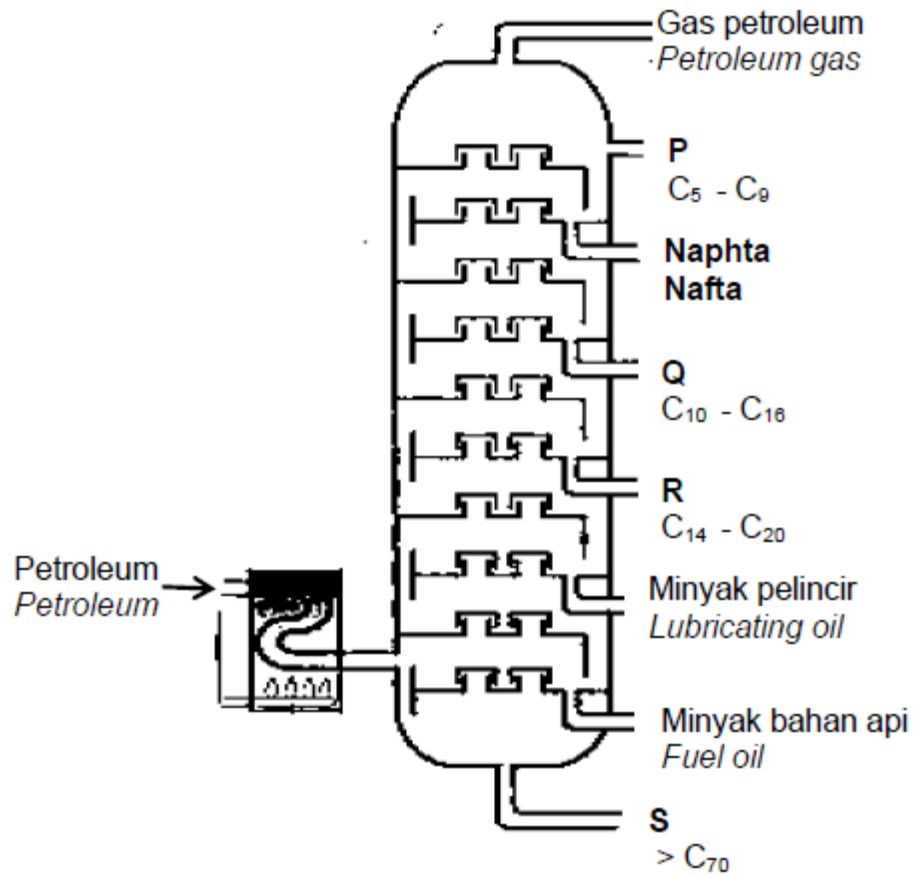
- A Gas tidak berwarna terbebas
Colourless gas is released
- B Pepejal perang terbentuk
Brown solid is formed
- C Kuprum semakin menipis
Copper become thinner
- D Keamatan warna biru larutan berkurang
Intensity of blue colour solution decreases

22 Rajah 22 menunjukkan penyulingan berperingkat bagi petroleum.

Diagram 22 shows the fractional distillation of petroleum.

Antara berikut yang manakah digunakan sebagai bahan api untuk kenderaan berat seperti bas dan lori?

Which of the following is used as fuel for heavy vehicles such as buses and lorries?



Rajah/Diagram 22

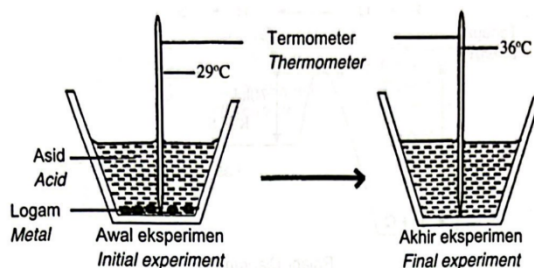
A P

C R

B Q

D S

- 23 Rajah 23 menunjukkan susunan radas untuk menentukan haba tindak balas.
 Diagram 23 shows the setup of apparatus for the determination of heat of reaction.



Rajah/ Diagram 23

Antara pernyataan berikut manakah benar?

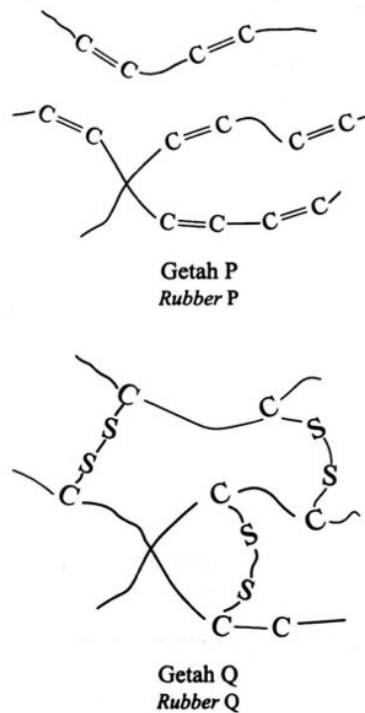
Which of the following statements is true?

- A Proses pemecahan ikatan berlaku.
 The process of bond breaking occurs.
- B Suhu meningkat semasa tindak balas berlaku
 The temperature increases during the reaction
- C Nilai ΔH dalam tindak balas ini adalah positif
 The value of ΔH for the reaction is positive.
- D Kandungan tenaga hasil tindak balas lebih tinggi daripada kandungan tenaga bahan tindak balas.
 The energy content of the product is higher than the energy content of the reactants.

Join SPM Study Group
<https://spmpaper.me/group>



- 24 Rajah 24 menunjukkan struktur bagi dua jenis getah
Diagram 24 shows the structure of two types of rubbers.



Rajah 24 / Diagram 24

Antara pernyataan berikut, yang manakah benar?
Which of the following statement is true?

- A Getah P lebih keras daripada getah Q
Rubber P is harder than rubber Q
- B Getah P lebih kenyal daripada getah Q
Rubber P is more elastic than rubber Q
- C Getah P lebih mudah teroksida daripada getah Q
Rubber P is oxidised more easily than rubber Q
- D Getah P tahan haba yang tinggi
Rubber P high heat resistance

25



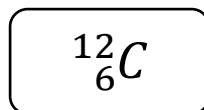
Rajah/ Diagram 25

Rajah 25 di atas menunjukkan satu situasi yang berlaku di Johor pada tahun 2021. Sebagai ahli biokimia yang terlibat di dalam pengurusan sisa dan air sisa, apakah kaedah Teknologi Hijau yang paling sesuai digunakan untuk mengatasi kejadian yang sama berulang lagi?

Diagram 25 above shows a situation that was happened in Johor in year 2021. As a biochemist that involved in waste and wastewater management, what is the most suitable Green Technology method to use to overcome the situation from happen again?

- A** Penggunaan alatan dan teknologi cekap tenaga.
Use of energy efficient tools and technology.
- B** Menggunakan bahan api alternatif untuk operasi industri.
Use alternative fuels in industrial operation.
- C** Penggunaan bakteria untuk menguraikan bahan berbahaya.
Uses of bacteria to compose dangerous chemicals.
- D** Memperketatkan tindakan undang-undang terhadap pesalah.
Restricted of laws on offender.

- 26 Rajah 26 menunjukkan simbol perwakilan piawai bagi atom karbon.
Diagram 26 shows the standard representation symbol of carbon atom.



Rajah/ Diagram 26

Apakah bilangan proton bagi atom karbon?
What is the number of protons for carbon atom?

- | | |
|--|--|
| <p>A 4</p> <p>B 12</p> | <p>C 6</p> <p>D 18</p> |
|--|--|
- 27 Nombor proton bagi atom R ialah 13 dan jisim atom relatifnya ialah 27.
 Pernyataan yang manakah **betul** tentang R?
*The proton number of atom R is 13 and its relative atomic mass is 27. Which statement is **correct** about R?*
- A** 13 g R mengandungi 6.02×10^{23} atom
13 g of R contains 6.02×10^{23} atom
- B** Jisim bagi 1 atom R ialah 13 g mol^{-1}
The mass of 1 atom R is 13 g mol^{-1}
- C** Atom R mempunyai 13 proton, 13 elektron dan 27 neutron.
Atom R has 13 protons, 13 electrons dan 27 neutrons.
- D** Jisim 1 mol R ialah 27 g
The mass of 1 mol R is 27 g

- 28** Pernyataan berikut merujuk kepada sumbangan seorang ahli sains dalam membangunkan Jadual Berkala Unsur.

The following statements refer to the contributions of a scientist in the development of the Periodic Table of Elements.

- Unsur yang mempunyai sifat kimia yang sama terletak pada lajur menegak yang sama.
Elements with similar chemical properties were placed in the same vertical column.
- Ruang ditinggalkan dalam Jadual Berkala Unsur ini untuk unsur yang belum ditemui.
Gaps were left in the Periodic Table of Elements for undiscovered elements.

Siapakah ahli sains tersebut?

Who was the scientist?

- A** Lothar Meyer
- B** John Newlands
- C** Dmitri Mendeleev
- D** Johann W. Dobereiner

- 29** Sebatian Z mempunyai sifat-sifat berikut:

Compound Z has the following properties.

- Takat lebur dan takat didih yang tinggi
High melting and boiling point
- Larut dalam air tetapi tak larut dalam pelarut organik
Soluble in water in water but insoluble in organic solvents.

Apakah Z?

What is Z?

- A** Asetamida/ *Acetamide*
- B** Naftalena/ *Naphthalene*
- C** Natrium klorida/ *Sodium Chloride*
- D** Karbon dioksida/ *Carbon dioxide*

- 30** Jadual 30 menunjukkan pemerhatian apabila satu siri ujian dijalankan bagi mengesahkan anion dan kation dalam sebatian X.
Table 30 shows the observations when a series of tests are conducted to verify the anion and cation in compound X.

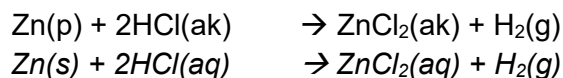
Ujian Test	Pemerhatian Observation
Tambah 2 cm ³ asid nitrik diikuti 2 cm ³ argentum nitrat ke larutan X <i>Add 2 cm³ of nitric acid follow by silver nitrate solution into solution X</i>	Mendakan putih terbentuk. <i>White precipitate is formed</i>
Tambah beberapa titis larutan ammonia sehingga berlebihan ke dalam larutan X. <i>Add a few drops of ammonia solution until excess to solution X.</i>	Mendakan putih terbentuk dan larut dalam larutan ammonia berlebihan. <i>White precipitate is formed and it is soluble in excess ammonia solution.</i>

Jadual 30/ Table 30

Apakah anion dan kation yang hadir dalam sebatian X?
What are the anion and cation present in compound X?

	Anion Anion	Kation Cation
A	Ion klorida <i>Chloride ion</i>	Ion zink <i>Zinc ion</i>
B	Ion klorida <i>Chloride ion</i>	Ion magnesium <i>Magnesium ion</i>
C	Ion sulfat <i>Sulphate ion</i>	Ion magnesium <i>Magnesium ion</i>
D	Ion sulfat <i>Sulphate ion</i>	Ion plumbum (II) <i>Lead (II) ion</i>

- 31 Berikut adalah persamaan kimia bagi tindak balas antara zink dan asid hidroklorik.
The following is the chemical equation for the reaction between zinc and hydrochloric acid.



Masa yang diambil untuk tindak balas lengkap antara 500 cm³ asid hidroklorik 0.5 mol dm⁻³ dengan serbuk zink berlebihan adalah 4 minit 30 saat.
 Berapakah kadar tindak balas ini?

[Jisim atom relatif: Zn = 65, 1 mol gas adalah 24 dm³ dalam keadaan bilik]

The time taken for the complete reaction between 500 cm³ of 0.5 mol dm⁻³ hydrochloric acid reacted with excess zinc powder is 4 minutes 30 seconds.

What is the rate of reaction?

[Relative atomic mass: Zn = 65, 1 mol of gas is 24 dm³ in room conditions]

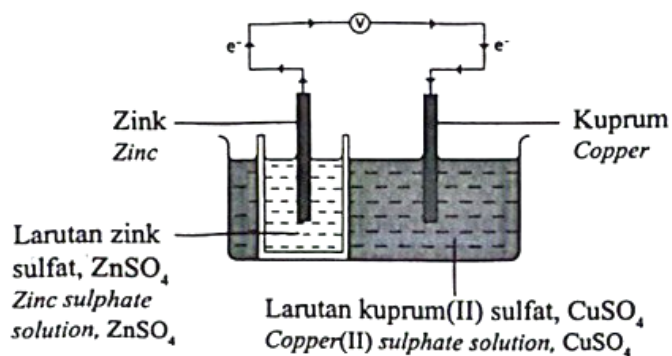
- | | |
|--|--|
| A 0.011 cm ³ s ⁻¹ | C 11.11 cm ³ s ⁻¹ |
| B 0.022 cm ³ s ⁻¹ | D 22.22 cm ³ s ⁻¹ |

- 32 Kaca soda kapur ditambahkan dengan bahan X dalam pembuatannya supaya menjadi kaca yang lebih tahan haba yang tinggi dan lengai secara kimia.
 Apakah bahan X?
Soda-lime glass is added with substance X in its manufacture so that it becomes a glass that is more resistant to high heat and is chemically inert.
What is substance X?

- | | |
|---|--|
| A Kalsium karbonat
<i>Calcium carbonate</i> | C Boron oksida
<i>Boron oxide</i> |
| B Natrium karbonat
<i>Sodium carbonate</i> | D Plumbum(II) oksida
<i>Lead(II) oxide</i> |

33 Rajah 33 menunjukkan satu sel kimia.

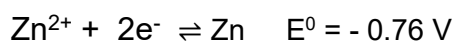
Diagram 33 shows a voltaic cell.



Rajah 33 / Diagram 33

Diberi nilai keupayaan elektrod piawai, E^0 bagi dua sel setengah adalah seperti berikut;

Given the values of standard electrode potential, E^0 of two half-cells are as follow :



Berapakah nilai voltan bagi sel ini?

What is the voltage for the cell?

A - 0.42 V

B + 0.42 V

C - 1.10 V

D + 1.10 V

34 Jadual 34 menunjukkan maklumat bagi dua sebatian organik R dan S.

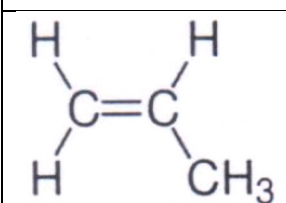
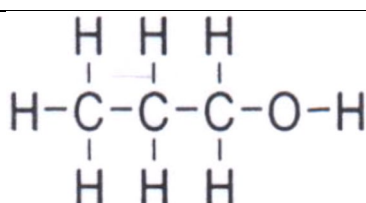
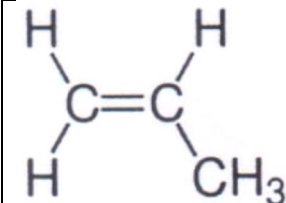
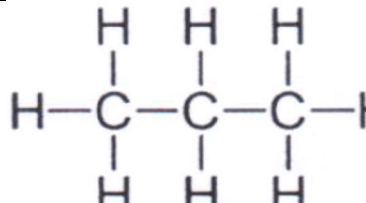
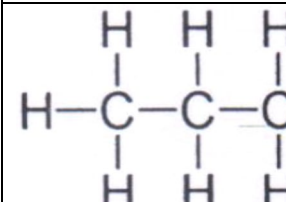
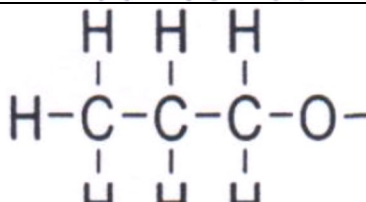
Table 34 shows the information of two organic compounds R and S.

Sebatian organik Organic compounds	Maklumat Information
R	- Tidak larut dalam air <i>Insoluble in water</i> - Menyahwarnakan warna perang air bromin <i>Decolourises brown colour of bromine</i>
S	- Larut campur dengan air dalam semua bahagian <i>Miscible with water in all proportions</i> - Terbakar dengan nyalaan biru menghasilkan karbon dioksida dan air <i>Burns with blue flame to produce carbon dioxide and water</i>

Jadual/ Table 34

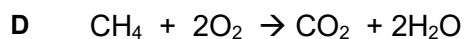
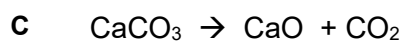
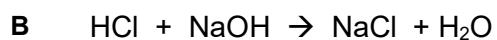
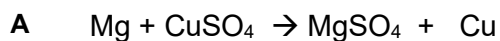
Berdasarkan maklumat yang diberi, formula struktur manakah mempunyai ciri yang sama seperti di atas?

Based on the information given, which structural formula has the same characteristics as a above?

	R	S
A		
B		
C		

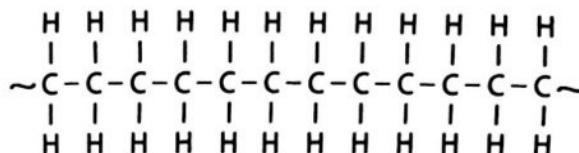
35 Antara yang berikut, yang manakah menyerap haba daripada persekitaran?

Which of the following reactions absorbs heat from the surroundings?



36 Rajah 36 menunjukkan formula struktur bagi satu polimer.

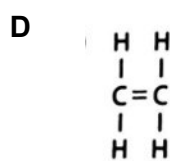
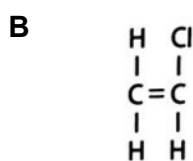
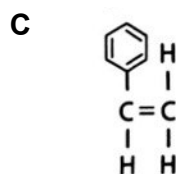
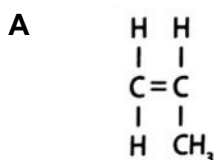
Diagram 36 shows the structural formula of a polymer.



Rajah 36 / Diagram 36

Pilih formula struktur monomer bagi polimer dalam Rajah 36.

Choose the structural formula of monomer for the polymer in Diagram 36.

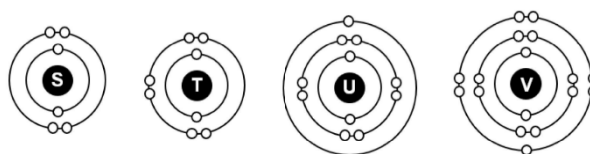


- 37** Rudi telah mencuci baju dengan menggunakan air telaga tetapi kesan kotoran masih ada. Antara yang berikut, pernyataan manakah yang paling tepat menerangkan situasi itu?
Rudi has washed his clothes using water from the well but the dirt is still there.
Which of the following statements is the most accurately describe the situation?

- A** Terdapat ion Ca^{2+} dan ion Mg^{2+} dalam air telaga
There are Ca^{2+} ions and Mg^{2+} ions in the well water
- B** Menggunakan kuantiti detergen yang sedikit
Use a small quantity of detergent
- C** Kewujudan garam tak terlarutkan
The presence of insoluble salts
- D** Air telaga terlalu sejuk
The well water is too cold

- 38** Rajah 38 menunjukkan susunan elektron bagi atom-atom S, T, U dan V. S, T, U dan V adalah bukan simbol sebenar bagi unsur-unsur tersebut.

Diagram 38 shows the electrons arrangements of atoms S, T, U and V.
S, T, U and V are not the actual symbols of the elements.



Rajah/ Diagram 38

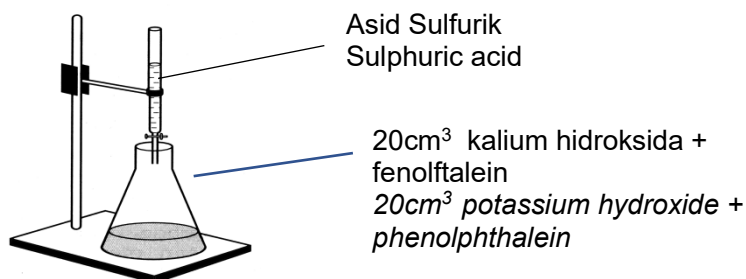
Pasangan unsur-unsur manakah yang membentuk suatu sebatian yang boleh menyalakan mentol dalam keadaan akueus?

Which pair of elements forms a compound that is bulb light up in molten states?

- A** S dan T/ *S and T*
- B** S dan U/ *S and U*
- C** V dan S/ *V and S*
- D** U dan V/ *U and V*

- 39** Rajah 39 menunjukkan susunan radas bagi pentitratan larutan kalium hidroksida dan asid sulfurik.

Diagram 39 shows a set-up of apparatus for the titration of potassium hydroxide solution and sulphuric acid.



Rajah/ Diagram 39

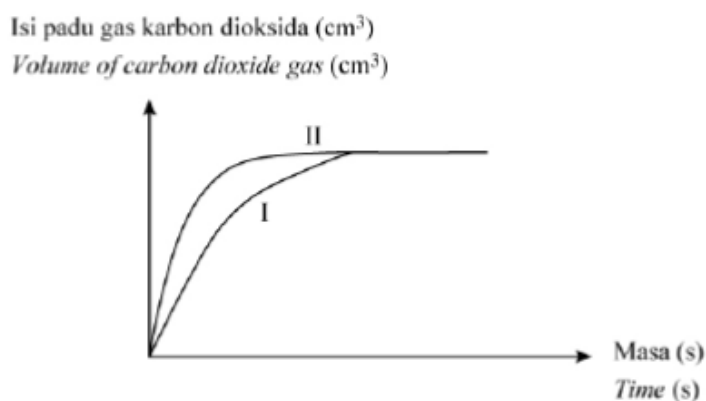
Didapati bahawa 10 cm³ asid sulfurik diperlukan untuk meneutralkan larutan kalium hidroksida yang mempunyai pH 13. Apakah kepekatan asid sulfurik?

It was found that 10 cm³ of sulphuric acid is needed to neutralise potassium hydroxide solution that has pH 13. What is the concentration of sulphuric acid?

- | | | | |
|----------|---------------------------|----------|---------------------------|
| A | 0.05 mol dm ⁻³ | C | 0.15 mol dm ⁻³ |
| B | 0.10 mol dm ⁻³ | D | 0.20 mol dm ⁻³ |

- 40 Rajah menunjukkan lengkung yang diperoleh apabila kalsium karbonat bertindak balas dengan asid hidroklorik.

Diagram shows curves which are obtained when calcium carbonate reacts with hydrochloric acid.



Rajah/ Diagram 40

Keadaan bahan tindak balas yang manakah menghasilkan lengkung I dan II?

Which conditions of reactants produce curve I and II?

	Lengkung I Curve I	Lengkung II Curve II
A	Ketulan kalsium karbonat berlebihan + 50 cm ³ asid hidroklorik 1.0 mol dm ⁻³ <i>Excess calcium carbonate granules + 50 cm³ of 1.0 mol dm⁻³ hydrochloric acid</i>	Ketulan kalsium karbonat berlebihan + 50 cm ³ asid hidroklorik 2.0 mol dm ⁻³ <i>Excess calcium carbonate granules + 50 cm³ of 2.0 mol dm⁻³ hydrochloric acid</i>
B	Ketulan kalsium karbonat berlebihan + 50 cm ³ asid hidroklorik 1.0 mol dm ⁻³ <i>Excess calcium carbonate granules + 50 cm³ of 1.0 mol dm⁻³ hydrochloric acid</i>	Ketulan kalsium karbonat berlebihan + 100 cm ³ asid hidroklorik 1.0 mol dm ⁻³ <i>Excess calcium carbonate granules + 100 cm³ of 1.0 mol dm⁻³ hydrochloric acid</i>
C	Ketulan kalsium karbonat berlebihan + 50 cm ³ asid hidroklorik 1.0 mol dm ⁻³ <i>Excess calcium carbonate granules + 50 cm³ of 1.0 mol dm⁻³ hydrochloric acid</i>	Serbuk kalsium karbonat berlebihan + 50 cm ³ asid hidroklorik 2.0 mol dm ⁻³ <i>Excess calcium carbonate powder + 50 cm³ of 2.0 mol dm⁻³ hydrochloric acid</i>
D	Ketulan kalsium karbonat berlebihan + 50 cm ³ asid hidroklorik 2.0 mol dm ⁻³ <i>Excess calcium carbonate granules + 50 cm³ of 2.0 mol dm⁻³ hydrochloric acid</i>	Serbuk kalsium karbonat berlebihan + 50 cm ³ asid hidroklorik 2.0 mol dm ⁻³ <i>Excess calcium carbonate powder + 50 cm³ of 2.0 mol dm⁻³ hydrochloric acid</i>