

1. Which of the following substances consist of atoms?
Antara berikut bahan manakah terdiri daripada atom?
 - A. Magnesium
Magnesium
 - B. Oxygen
Oksigen
 - C. Lead(II) bromide
Plumbum(II) bromida
 - D. Naphthalene
Naftalena

2. Why carbon-12 was chosen as a reference standard for relative atomic mass and relative molecular mass?
Mengapakah karbon-12 telah dipilih sebagai rujukan piawai untuk jisim atom relatif dan jisim molekul relatif?
 - A. Carbon has three isotopes
Karbon mempunyai tiga isotop
 - B. Carbon is non-metal element
Karbon merupakan unsur bukan logam
 - C. Carbon is a solid and easier to be handle
Karbon adalah pepejal dan lebih senang dikendalikan
 - D. Carbon is located in Group 14 in the Periodic Table of Elements
Karbon terletak dalam Kumpulan 14 dalam Jadual Berkala Unsur

3. Which of the following particles equal to 1 mole?
Antara zarah yang berikut, yang manakah bersamaan dengan 1 mol?
 - A. The number of atom in 1 g of hydrogen gas
Bilangan atom dalam 1 g gas hidrogen
 - B. The number of molecule in 1 g of hydrogen gas
Bilangan molekul dalam 1 g gas hidrogen
 - C. 6.02×10^{23} of hydrogen atoms in hydrogen gas
 6.02×10^{23} atom hidrogen dalam gas hidrogen
 - D. 6.02×10^{23} of hydrogen molecule in hydrogen gas
 6.02×10^{23} molekul hidrogen dalam gas hidrogen

4. Which of the following gases contains 0.4 mol of atoms at room temperature and pressure?
[1 mol of gas occupies the volume of 24 dm^3 at room temperature and pressure]
Antara gas berikut, yang manakah mengandungi 0.4 mol atom pada suhu dan tekanan bilik?
[1 mol gas menepati isipadu sebanyak 24 dm^3 pada suhu dan tekanan bilik]
 - A. 4.8 dm^3 He
 - B. 4.8 dm^3 H₂
 - C. 4.8 dm^3 SO₃
 - D. 4.8 dm^3 CO₂

5. Which of the following gases exists as a monoatom?

Antara gas yang berikut, yang manakah wujud sebagai monoatom?

- A. Neon gas
Gas neon
- B. Oxygen gas
Gas oksigen
- C. Nitrogen gas
Gas nitrogen
- D. Carbon dioxide gas
Gas karbon dioksida

6. Which characteristics is **correct** about elements in Group 1 in the Periodic Table as going down the group?

*Ciri manakah yang **betul** tentang unsur-unsur dalam Kumpulan 1 dalam Jadual Berkala Unsur apabila menuruni kumpulan?*

- A. The tendency to release electron decreases
Kecenderungan menerima elektron berkurang
- B. The reactivity decreases
Kereaktifan berkurang
- C. All are conductor of heat
Semua adalah konduktor haba
- D. All insoluble in water
Semua tidak larut dalam air

7. Table 1 below shows the electron arrangement of four elements W, X, Y and Z.

Jadual 1 di bawah menunjukkan susunan elektron bagi empat unsur W, X, Y dan Z.

Element <i>Unsur</i>	Electron arrangement <i>Susunan elektron</i>
W	2.4
X	2.8.2
Y	2.8.6
Z	2.8.8.1

Table / *Jadual* 1

Which of the elements will form an ionic bond with the oxygen atom?

Unsur-unsur yang manakah akan membentuk ikatan ionik dengan atom oksigen?

- A. W and Y
W dan Y
- B. W and X
W dan X
- C. Y and Z
Y dan Z
- D. X and Z
X dan Z

8. Table 2 shows the electron arrangement of element Y and element Z.
Jadual 2 menunjukkan susunan elektron bagi unsur Y dan unsur Z.

Element Y <i>Unsur Y</i>	Element Z <i>Unsur Z</i>
2.4	2.6

Table / *Jadual 2*

What is the formula and the type of bond of the compound formed from the reaction between Y and Z?

Apakah formula dan jenis ikatan bagi sebatian yang terbentuk daripada tindak balas antara Y dan Z?

	Formula <i>Formula</i>	Type of bond <i>Jenis ikatan</i>
A.	Y_2Z	Covalent <i>Kovalen</i>
B.	Y_2Z	Ionic <i>Ionik</i>
C.	YZ_2	Covalent <i>Kovalen</i>
D.	YZ_2	Ionic <i>Ionik</i>

9. Antara yang berikut, yang manakah boleh bertindak sebagai elektrolit?
Which of the following substances can act as an electrolyte?

- A. Mengalirkan haba dalam keadaan lebur sahaja
Conducts heat only in the molten state
- B. Mengalirkan arus elektrik dalam keadaan lebur dan akueus
Conducts electricity in the molten and aqueous states
- C. Mengalirkan arus elektrik dalam keadaan pepejal
Conducts electricity in the solid state
- D. Mengalirkan arus elektrik dalam keadaan cecair sahaja
Conducts electricity only in the liquid state.

10. Which of the following substances is a monoprotic acid?
Antara bahan-bahan berikut, yang manakah merupakan asid monoprotik?

- A. Propanoic acid, C_2H_5COOH
Asid propanoik, C_2H_5COOH
- B. Phosphoric acid, H_3PO_4
Asid fosforik, H_3PO_4
- C. Sulphuric acid, H_2SO_4
Asid sulfurik, H_2SO_4
- D. Carbonic acid, H_2CO_3
Asid karbonik, H_2CO_3

11. Which of the following salts can be prepared by the double decomposition method?
Antara garam yang berikut, yang manakah boleh disediakan melalui kaedah penguraian ganda dua?
- Magnesium sulphate
Magnesium sulfat
 - Ammonium chloride
Ammonium klorida
 - Copper(II) nitrate
Kuprum (II) nitrat
 - Lead (II) iodide
Plumbum (II) iodida
12. Diagram 1 shows the properties and the uses of glass Z .
Rajah 1 menunjukkan sifat dan kegunaan kaca Z .

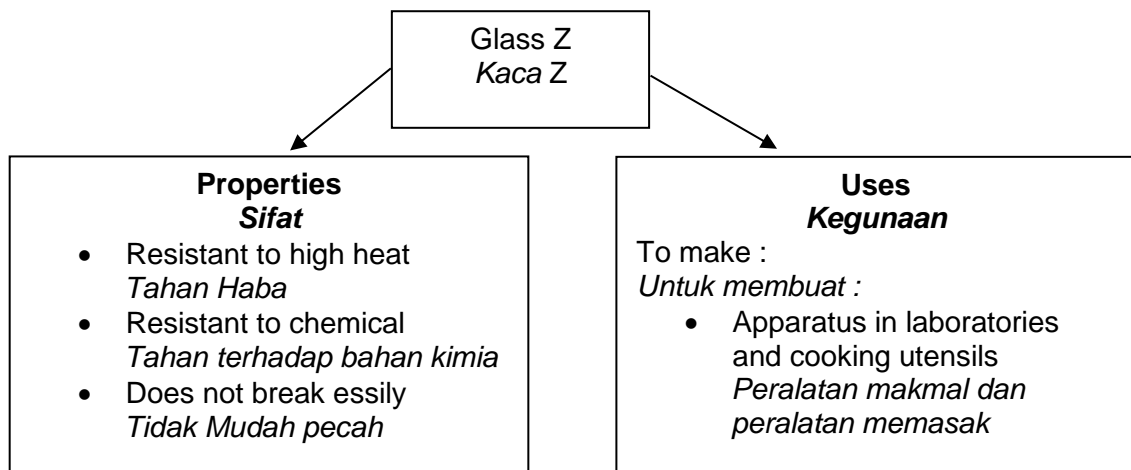


Diagram / Rajah 1

Which of the following is the type of glass Z?
Antara berikut yang manakah merupakan jenis kaca Z?

- Lead glass
Kaca plumbum
- Soda lime glass
Kaca soda kapur
- Borosilicate glass
Kaca borosilikat
- Fused silicate glass
Kaca silika terlakur

13. Which of the following statements is **true** for both methanol and propanol?
Pernyataan yang manakah benar bagi kedua-dua metanol dan propanol?
- A. Have different chemical properties
Semua sifat kimia berbeza
- B. Have similar physical properties
Semua sifat fiziknya sama
- C. Both have same function group
Kedua-dua mempunyai kumpulan berfungsi yang sama
- D. Both have one similar chemical formulae
Kedua-dua boleh diwakili oleh satu formula kimia yang sama
14. What is the general formula of alkenes?
Apakah formula am bagi alkena?
- A. C_nH_{2n+2}
- B. C_nH_{2n}
- C. $C_nH_{2n+1}OH$
- D. $C_nH_{2n+1}COOH$
15. Diagram 2 shows a flower that has a pleasant fragrance.
Rajah 2 menunjukkan sejenis bunga yang berbau harum.



Diagram / Rajah 2

What is the name of the substance that gives the pleasant fragrance?
Apakah nama bahan yang memberikan haruman itu?

- A. Benzyl ethanoate
Benzil etanoat
- B. Ethane -1,2 - diol
Etana -1,2 - diol
- C. Ethanoic acid
Asid etanoik
- D. Ethanol
Etanol

16. Which of the following is a redox reaction?
Antara berikut, manakah merupakan tindak balas redoks?
- Displacement reaction
Tindak balas penyesaran
 - Neutralisation reaction
Tindak balas peneutralan
 - Precipitation reaction
Tindak balas pemendakan
 - Substitution reaction
Tindak balas penukargantian
17. Diagram 3 shows the apparatus set-up to study the reactivity of a metal with oxygen. The colour of the product formed is yellow when hot and white when cold.
Rajah 3 menunjukkan susunan radas untuk mengkaji kereaktifan suatu logam dengan oksigen. Warna hasil yang terbentuk adalah kuning apabila panas dan putih apabila sejuk.

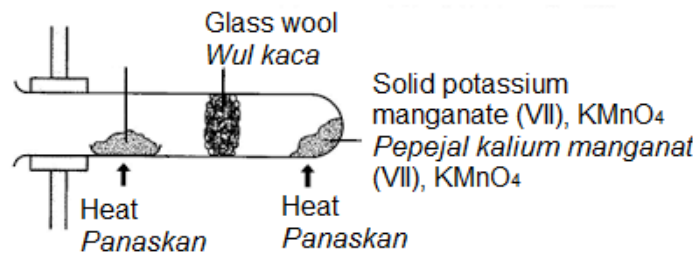


Diagram / *Rajah 3*

What is the metal?
Apakah logam itu?

- Iron
Ferum
- Zinc
Zink
- Lead
Plumbum
- Copper
Kuprum

18. Diagram 4 represents energy level of an endothermic reaction.
Rajah 4 mewakili aras tenaga satu tindak balas endotermik.

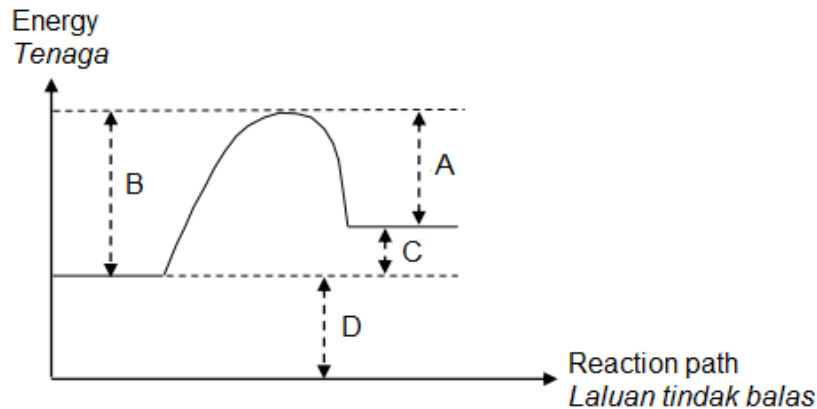


Diagram / Rajah 4

Which of the following A, B, C and D represents the heat change?
Antara A, B, C dan D yang manakah menunjukkan perubahan tenaga?

19. Which statements are **correct** about soap and detergent?
Pernyataan manakah yang **betul** tentang sabun dan detergen?

	Soap Sabun	Detergent Detergen
A.	Contains acid <i>Mengandungi asid</i>	Contains alkali <i>Mengandungi alkali</i>
B.	Effective in hard water <i>Berkesan dalam air liat</i>	Less effective in hard water <i>Kurang berkesan dalam air liat</i>
C.	Does not form scum in hard water <i>Tidak membentuk kekat dalam air liat</i>	Form scum in hard water <i>Membentuk kekat dalam air liat</i>
D.	Made from vegetable oil <i>Diperbuat daripada minyak sayuran</i>	Made from petroleum <i>Diperbuat daripada petroleum</i>

20. Diagram 5 shows a part of the label on a bottle of strawberry jam
Rajah 5 menunjukkan sebahagian daripada label pada sebotol jem strawberi.



Diagram / Rajah 5

Which of the following ingredients is an antioxidant in the jam?

Antara bahan berikut, yang manakah merupakan antioksidan di dalam jem tersebut?

- A. Sugar
Gula
- B. Pectin
Pektin
- C. Citric acid
Asid sitrik
- D. Ethyl butanoate
Etil butanoat
21. Which of the following pairs of isotope and its use is **correct**?
Pasangan yang manakah menunjukkan isotop dan kegunaannya yang betul?

	Isotope <i>Isotop</i>	Use <i>Kegunaan</i>
A.	Krypton-85 <i>Kripton-85</i>	Diagnose thyroid problem <i>Mendiagnosis masalah tiroid</i>
B.	Iodine-131 <i>Iodin-131</i>	Kills cancer cells <i>Membunuh sel kanser</i>
C.	Cobalt-60 <i>Kobalt-60</i>	Estimates the age of fossils <i>Menganggarkan usia fosil</i>
D.	Sodium-24 <i>Natrium-24</i>	Trace leaks in gas or oil pipes <i>Mengesan kebocoran gas atau saluran paip gas</i>

22. The relative formula mass of $Y_3(PO_4)_2$ is 310. Find the relative atomic mass of element Y.
 [Relative atomic mass : O = 16, P = 31]
Jisim formula relatif bagi $Y_3(PO_4)_2$ ialah 310. Tentukan jisim atom relatif bagi unsur Y.
 [Jisim atom relatif : O = 16, P = 31]
- A. 12
- B. 23
- C. 40
- D. 65

23. What is the number of moles of copper(II) nitrate in 56.4 g of copper(II) nitrate, $\text{Cu}(\text{NO}_3)_2$?
 [Relative atomic mass : O = 16, Cu = 64, N = 14]
*Berapakah bilangan mol kuprum(II) nitrat dalam 56.4 g kuprum(II) nitrat, $\text{Cu}(\text{NO}_3)_2$?
 [Jisim atom relatif : O = 16, Cu = 64, N = 14]*
- A. 0.30 mol
 B. 0.32 mol
 C. 0.45 mol
 D. 3.33 mol
24. Diagram 6 shows the electron arrangement of atom T.
Rajah 6 menunjukkan susunan elektron bagi atom T.

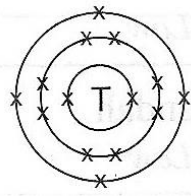


Diagram / Rajah 6

- Atoms T and U are placed in the same period of in the Periodic Table of Element. The atomic radius of atom U is larger than atom T. What is the probable electron arrangement of atom U?
Atom T dan U terletak dalam kala yang sama dalam Jadual Berkala Unsur. Jejari atom U lebih besar daripada atom T. Apakah susunan elektron yang mungkin bagi atom U?
- A. 2.8.2
 B. 2.8.6
 C. 2.8.8
 D. 2.8.8.4
25. Iron and copper are transition metals. Which of the following is the special characteristic of the metals?
Ferum dan kuprum ialah logam peralihan. Antara yang berikut, yang manakah merupakan ciri-ciri bagi logam tersebut?
- A. Soft solid
Pepejal lembut
 B. Soluble in water
Larut dalam air
 C. Low melting point
Takat lebur rendah
 D. Has more than one oxidation number
Mempunyai lebih daripada satu nombor pengoksidaan

26. Diagram 7 shows the electron arrangement of a compound formed between atom P and Q.
Rajah 7 di bawah menunjukkan susunan elektron sebatian yang terbentuk antara atom P dan Q.

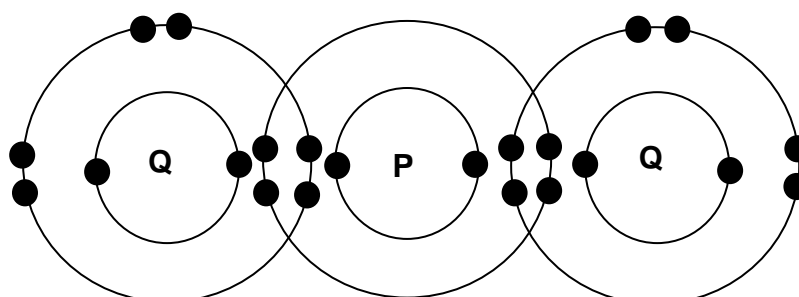


Diagram / Rajah 7

Which of the following statements is **true** about the compound?
*Antara pernyataan berikut, yang manakah **benar** tentang sebatian itu?*

- A. It is an ionic compound
Merupakan sebatian ionik
- B. The compound is formed by covalent bonds
Terbentuk melalui ikatan kovalen
- C. The compound has high boiling point
Mempunyai takat didih yang tinggi
- D. The compound is formed by electron transfer
Terbentuk melalui perpindahan elektron
27. In the extraction of aluminium by electrolysis molten aluminium oxide, cryolite is added to the mixture to
Dalam pengekstrakan aluminium melalui elektrolisis leburan aluminium oksida, kriolit ditambah ke dalam campuran untuk
- A. catalyse the electrolysis process
memungkinkan proses elektrolisis
- B. absorb the released oxygen gas
menyerap gas oksigen yang dibebaskan
- C. lower the melting point of aluminium oxide
merendahkan takat lebur aluminium oksida
- D. increase the purity of the aluminium obtained
menambah ketulenan aluminium yang diperolehi

28. Diagram 8 below shows volume and concentration of potassium hydroxide solution and ethanoic acid.

Rajah 8 menunjukkan isipadu dan kepekatan bagi larutan kalium hidroksida dan asid etanoik.

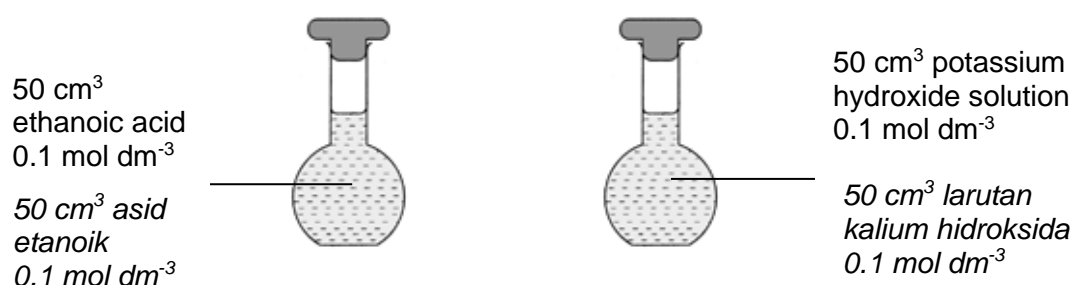


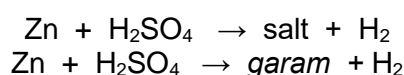
Diagram / Rajah 8

Which of the following statements are **true** for both solution?

Antara pernyataan berikut yang manakah **benar** bagi kedua-dua larutan itu?

	Potassium hydroxide solution <i>Larutan kalium hidroksida</i>	Ethanoic acid <i>Asid etanoik</i>
A.	Weak alkali <i>Alkali lemah</i>	Weak acid <i>Asid lemah</i>
B.	Low pH value <i>Nilai pH rendah</i>	High pH value <i>Nilai pH tinggi</i>
C.	High degree of ionization <i>Darjah pengionan tinggi</i>	Low degree of ionization <i>Darjah pengionan rendah</i>
D.	Low concentration of hydroxide ion <i>Kepekatan ion hidroksida rendah</i>	Low concentration of hydrogen ion <i>Kepekatan ion hidrogen rendah</i>

29. The following equation represents a reaction between zinc metal and sulphuric acid.
Persamaan berikut mewakili tindak balas antara logam zink dan asid sulfurik.



What is the name of the salt and its solubility in water?

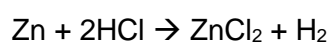
Apakah nama bagi garam itu dan keterlarutannya dalam air?

	Name of salt <i>Nama garam</i>	Solubility in water <i>Keterlarutan dalam air</i>
A.	Zinc sulphate <i>Zinc sulfat</i>	Soluble <i>Larut</i>
B.	Zinc oxide <i>Zink oksida</i>	Insoluble <i>Tidak larut</i>
C.	Zinc oxide <i>Zink oksida</i>	Soluble <i>Larut</i>
D.	Zinc sulphate <i>Zinc sulfat</i>	Insoluble <i>Tidak larut</i>

30. Calculate the percentage of nitrogen in ammonium nitrate, NH_4NO_3
Hitungkan peratus kandungan nitrogen dalam ammonium nitrat, NH_4NO_3 .

Given that the relative atomic mass of H = 1, N = 14, O = 16
Diberi bahawa jisim atom relatif H = 1, N = 14, O = 16

- A. 34.5
 B. 35.0
 C. 35.4
 D. 53.0
31. The following equation shows the reaction between zinc powder and 25.0 cm^3 of 1.0 mol dm^{-3} hydrochloric acid.
Persamaan berikut menunjukkan tindak balas antara serbuk zink dengan 25.0 cm^3 asid hidroklorik 1.0 mol dm^{-3} .



How can the rate of hydrogen gas production be increased?
Bagaimanakah kadar penghasilan gas hidrogen boleh ditingkatkan?

- A. Replace zinc powder with zinc granules
Menggantikan serbuk zink dengan ketulan zink
 B. Increase the volume of hydrochloric acid
Menambahkan isi padu asid hidroklorik
 C. Decrease the concentration of hydrochloric acid
Mengurangkan kepekatan asid hidroklorik
 D. Decrease the activation energy by adding copper(II) sulphate solution
Mengurangkan tenaga pengaktifan dengan menambahkan larutan kuprum(II) sulfat
32. Diagram 9 shows the energy profile diagram of a reaction.
Rajah 9 menunjukkan gambar rajah profil tenaga bagi suatu tindak balas.

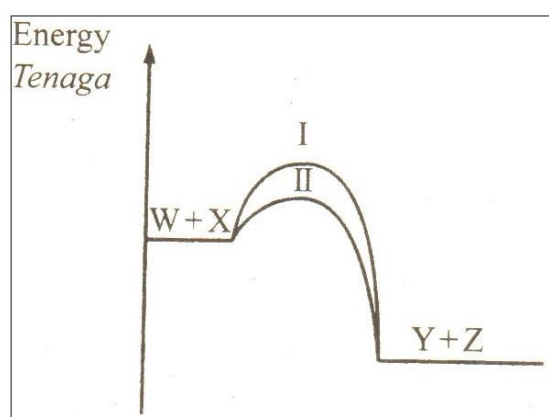


Diagram / Rajah 9

Based on the Collision Theory, which statement explains the changing of curve I to curve II?

Berdasarkan Teori Perlanggaran, pernyataan manakah menerangkan perubahan lengkungan I kepada lengkungan II?

- A. The total surface area of the solid reactants increases
Jumlah luas permukaan pepejal bahan tindak balas meningkat
- B. The kinetic energy of the particles of reactant decreases
Tenaga kinetik zarah-zarah bahan tindak balas berkurangan
- C. The number of mole per unit volume of particles increases
Bilangan mol per unit isipadu zarah-zarah meningkat
- D. The activation energy of the reaction decreases
Tenaga pengaktifan tindak balas berkurangan

33. Diagram 10 shows a conversion of butanol.
Rajah 10 menunjukkan satu siri perubahan butanol

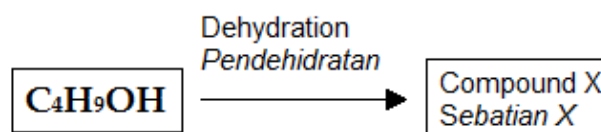


Diagram / Rajah 10

Which of the following is the isomer of compound X?
Antara yang berikut, yang manakah isomer bagi sebatian X?

- I. But-1-ene
But-1-ena
- II. 2-methylprop-1-ene
2-metilprop-1-ena
- III. 2-methylpropane
2-metilpropana
- IV. 2,2-dimethylbutane
2,2-dimetilbutana
- A. I and II
I dan II
- B. I and IV
I dan IV
- C. II and III
II dan III
- D. III and IV
III dan IV
34. 1 mol of alcohol is burnt in excess oxygen.
Which alcohol produces carbon dioxide and water in a mol ratio of 3:4?
1 mol alkohol dibakar dalam oksigen berlebihan.
Alkohol manakah yang menghasilkan karbon dioksida dan air dalam nisbah mol 3:4?
- A. Methanol
Metanol
- B. Ethanol
Etanol
- C. Propanol
Propanol
- D. Butanol
Butanol

35. A method to control the rusting of underground iron pipelines is through sacrificial protection.

Which of the following is the sacrificial metal?

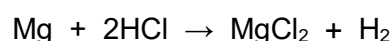
Cara mengawal pengaratn saluran paip besi bawah tanah adalah melalui perlindungan korban.

Antara yang berikut, yang manakah adalah logam korban?

- A. Copper
Kuprum
- B. Lead
Plumbum
- C. Tin
Stanium
- D. Zinc
Zink

36. The following equation represents the reaction between magnesium and hydrochloric acid.

Persamaan kimia berikut mewakili tindak balas antara magnesium dengan asid hidroklorik.



What is the volume of hydrogen gas produced when 2.4 g of magnesium reacts with hydrochloric acid at standard temperature and pressure (STP)?

[Relative atomic mass : Mg = 24, H = 1; Molar volume of gas at STP = 22.4 dm³ mol⁻¹]

Berapakah isipadu gas hidrogen yang terhasil apabila 2.4 g magnesium bertindak balas dengan asid hidroklorik pada suhu dan tekanan piawai STP?

[Jisim atom relatif : Mg = 24, H = 1 ; Isipadu molar gas pada STP = 22.4 dm³ mol⁻¹]

- A. 2.24 dm³
 - B. 1.12 dm³
 - C. 0.10 dm³
 - D. 4.48 dm³
37. Table 3 shows the composition of glucose.
Jadual 3 menunjukkan komposisi bagi glukosa.

Element <i>Unsur</i>	Percentage (%) <i>Peratus (%)</i>
C	40.0
H	6.70
O	53.3

Table / *Jadual 3*

Find the empirical formula of glucose.

[Relative atomic mass : C = 12, H = 1, O = 16]

Cari formula empirik bagi glukosa.

[Jisim atom relatif : C = 12, H = 1, O = 16]

- A. CH₂O
- B. CHO₃
- C. C₂HO₂
- D. C₂H₂O₃

38. Which molecule has triple covalent bond between its atom?
 [Proton number : H = 1, Cl = 17, O = 16, N = 14]
Molekul manakah yang mempunyai ikatan kovalen ganda tiga antara atomnya?
 [Nombor proton : H = 1, Cl = 17, O = 16, N = 14]

- A. Hydrogen
Hidrogen
 B. Chlorine
Klorin
 C. Nitrogen
Nitrogen
 D. Oxygen
Oksigen

39. Table 4 shows the observation of electrolysis of a substance using carbon electrodes.
Jadual 4 menunjukkan pemerhatian bagi elektrolisis suatu bahan menggunakan elektrod karbon.

Electrode <i>Elektrod</i>	Observation <i>Pemerhatian</i>
Anode <i>Anod</i>	A greenish-yellow gas is released <i>Gas berwarna kuning kehijauan</i>
Cathode <i>Katod</i>	A colourless gas which burns with a 'pop' sound when tested with a lighted splinter <i>Gas yang tidak berwarna dan terbakar dengan bunyi 'pop' apabila diuji dengan kayu uji bernyala.</i>

Table / *Jadual* 4

The electrolyte maybe
Elektrolit itu mungkin

- A. dilute hydrochloric acid
asid hidroklorik cair
 B. concentrated potassium chloride solution
larutan kalium klorida pekat
 C. copper(II) chloride solution
larutan kuprum(II) klorida
 D. concentrated magnesium bromide solution
larutan magnesium bromida pekat

40. Diagram 11 shows the apparatus set-up to purify copper.
Rajah 11 menunjukkan susunan radas untuk menuliskan kuprum.

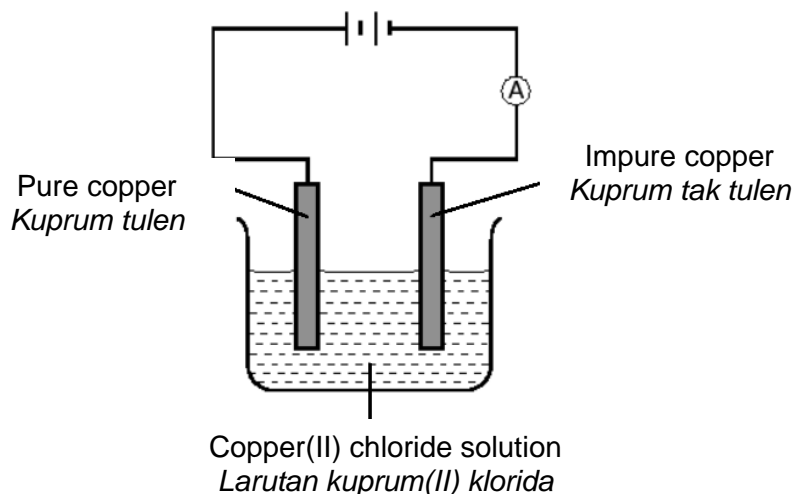
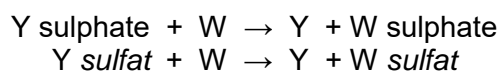
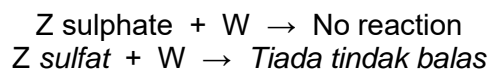
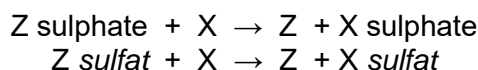


Diagram / Rajah 11

After several minutes, it is found that the copper is not purified. What should be done to ensure purification takes place?

Selepas beberapa minit, didapati kuprum tidak dituliskan. Apakah yang perlu dilakukan untuk memastikan penulenan berlaku?

- A. Use a bigger pure copper
Gunakan kuprum tulen yang lebih besar
- B. Interchange the terminals in the cell
Saling tukar terminal pada sel
- C. Increase the concentration of silver nitrate solution
Tambah kepekatan larutan kuprum(II) klorida
- D. Use silver chloride solution as electrolyte
Gunakan larutan argentum klorida sebagai elektrolit
41. W, X, Y and Z are four metals. Consider the reactions below involving these metals.
W, X, Y dan Z terdiri dari empat logam. Pertimbangkan tindak balas-tindak balas di bawah yang melibatkan logam-logam tersebut.



Arrange the metals W, X, Y and Z in descending order of the reactivity.

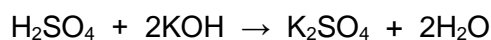
Susun kereaktifan logam-logam W, X, Y dan Z mengikut tertib menurun.

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

42. Which of the following solutions have the same number of hydrogen ions, H^+ , as in 50 cm^3 of 0.1 mol dm^{-3} sulphuric acid, H_2SO_4 ?
Antara larutan berikut, yang manakah mempunyai bilangan ion hidrogen, H^+ , sama seperti dalam 50 cm^3 0.1 mol dm^{-3} asid sulfurik, H_2SO_4 ?

- I 100 cm^3 of 0.1 mol dm^{-3} hydrochloric acid, HCl
 100 cm^3 0.1 mol dm^{-3} asid hidroklorik, HCl
- II 50 cm^3 of 0.2 mol dm^{-3} nitric acid, HNO_3
 50 cm^3 0.2 mol dm^{-3} asid nitrik, HNO_3
- III 100 cm^3 of 0.1 mol dm^{-3} ethanoic acid, CH_3COOH
 100 cm^3 0.1 mol dm^{-3} asid etanoik, CH_3COOH
- IV 50 cm^3 of 0.1 mol dm^{-3} phosphoric acid, H_3PO_4
 50 cm^3 0.1 mol dm^{-3} asid fosforik, H_3PO_4
- A. I and II only
I dan II sahaja
- B. I and III only
I dan III sahaja
- C. III and IV only
III dan IV sahaja
- D. I, II and III only
I, II dan III sahaja

43. The following equation represents the reaction between potassium hydroxide solution and dilute sulphuric acid.
Persamaan berikut mewakili tindak balas antara larutan kalium hidroksida dengan asid sulfurik cair.



What is the volume of 0.5 mol dm^{-3} sulphuric acid needed to neutralise 50 cm^3 of 0.5 mol dm^{-3} potassium hydroxide solution?
Apakah isi padu 0.5 mol dm^{-3} asid sulfurik yang diperlukan untuk meneutralkan 50 cm^3 larutan kalium hidroksida 0.5 mol dm^{-3} ?

- A. 12.5 cm^3
- B. 25.0 cm^3
- C. 50.0 cm^3
- D. 75.0 cm^3

44. Diagram 12 shows the method of preparing a soluble salt.
Rajah 12 menunjukkan kaedah penyediaan suatu garam terlarutkan.

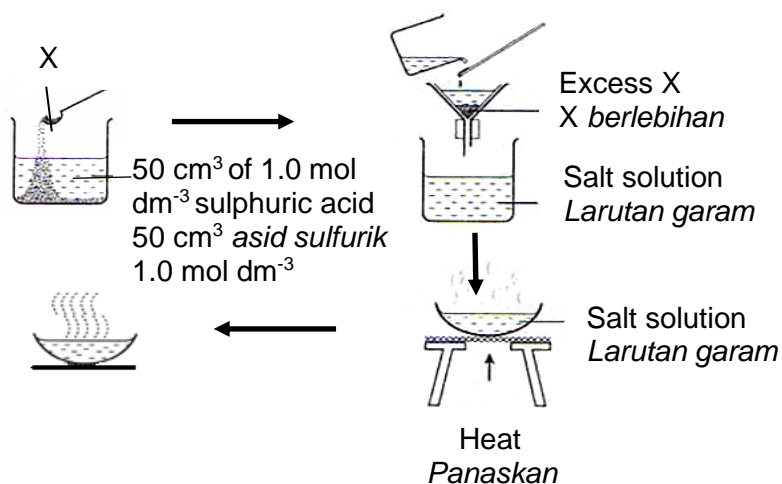


Diagram / Rajah 12

What is X?
Apakah X?

- A. Copper(II) nitrate
Kuprum(II) nitrat
- B. Copper(II) oxide
Kuprum(II) oksida
- C. Copper(II) chloride
Kuprum(II) klorida
- D. Copper(II) bromide
Kuprum(II) bromida
45. Diagram 13 above shows the arrangement of atoms in brass.
Rajah 13 di atas menunjukkan susunan atom bagi loyang.

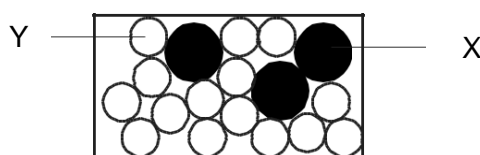


Diagram / Rajah 13

Which of the following could be atoms X and Y?
Yang manakah berikut mungkin atom X dan Y?

	X	Y
A.	Copper <i>Kuprum</i>	Tin <i>Stanium</i>
B.	Zinc <i>Zink</i>	Copper <i>Kuprum</i>
C.	Iron <i>Ferum</i>	Carbon <i>Karbon</i>
D.	Copper <i>Kuprum</i>	Zinc <i>Zink</i>

46. 0.2 mol of zinc powder react with excess dilute hydrochloric acid. After 30 seconds, 0.05 mol of zinc remains as residue.

What is the average rate of the reaction?

0.2 mol serbuk zink bertindak balas dengan asid hidroklorik cair berlebihan. Selepas 30 saat, didapati 0.05 mol zink tertinggal sebagai baki.

Berapakah kadar purata bagi tindak balas itu?

- A. $1.7 \times 10^{-3} \text{ mol s}^{-1}$
 B. $5.0 \times 10^{-3} \text{ mol s}^{-1}$
 C. $6.7 \times 10^{-3} \text{ mol s}^{-1}$
 D. $8.3 \times 10^{-3} \text{ mol s}^{-1}$
47. Table 5 shows the results of four reactions involving the heating of metals P, Q, R, S and their oxides.
Jadual 5 menunjukkan keputusan empat tindak balas yang melibatkan pemanasan logam P, Q, R, S dan oksida mereka.

Pairs of metal and metal oxide <i>Pasangan logam dan oksida logam</i>	Observation <i>Pemerhatian</i>
Metal P and oxide of Metal Q <i>Logam P dan oksida logam Q</i>	Metal Q is formed <i>Logam Q terbentuk</i>
Metal Q and oxide of Metal R <i>Logam Q dan oksida logam R</i>	Metal R is formed <i>Logam R terbentuk</i>
Metal P and oxide of Metal S <i>Logam P dan oksida logam S</i>	No noticeable <i>Tiada perubahan berlaku</i>
Metal S and oxide of Metal R <i>Logam S dan oksida logam R</i>	Metal R is formed <i>Logam R terbentuk</i>

Table / *Jadual 5*

Which series shows the descending order of reactivity of the metals with oxygen?

Siri yang manakah menunjukkan kereaktifan logam terhadap oksigen secara menurun?

- A. P, Q, R, S
 B. R, P, Q, S
 C. Q, P, R, S
 D. S, P, Q, R
48. When 50.0 cm^3 of 0.5 mol dm^{-3} silver nitrate solution is added to 50.0 cm^3 of 0.5 mol dm^{-3} sodium chloride solution, temperature of the mixture rises $3.4 \text{ }^\circ\text{C}$.
 What is the heat released in the experiment?
 [Specific heat capacity of solution, $c = 4.2 \text{ J g}^{-1} \text{ }^\circ\text{C}^{-1}$; Density of solution = 1 g cm^{-3}]
*Apabila 50.0 cm^3 larutan argentum nitrat 0.5 mol dm^{-3} dicampurkan kepada 50.0 cm^3 larutan natrium klorida 0.5 mol dm^{-3} , suhu campuran meningkat sebanyak $3.4 \text{ }^\circ\text{C}$.
 Berapakah haba yang dibebaskan dalam eksperimen itu?
 [Muatan haba tentu, $c = 4.2 \text{ J g}^{-1} \text{ }^\circ\text{C}^{-1}$; Ketumpatan larutan = 1 g cm^{-3}]*
- A. 1428 J
 B. 714 J
 C. 61.76 J
 D. 2856 J

49. Diagram 14 shows the energy level diagram of a reaction.
Rajah 14 menunjukkan gambarajah aras tenaga bagi satu tindak balas.

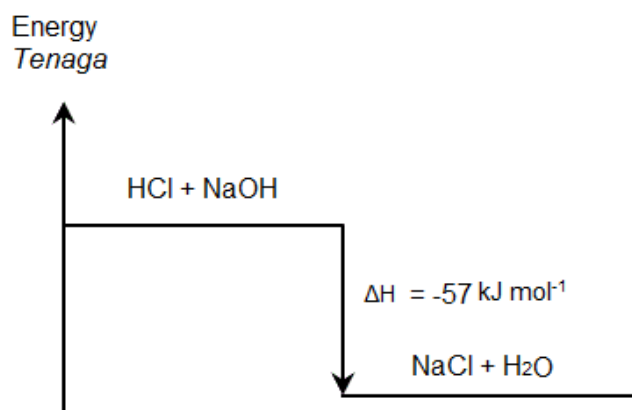


Diagram / *Rajah* 14

Which of the following acids is suitable to replace hydrochloric acid, HCl to obtain the same ΔH value?

Antara berikut, asid yang manakah sesuai menggantikan asid hidroklorik, HCl untuk mendapatkan nilai ΔH yang sama?

- A. Carbonic acid
Asid karbonik
- B. Ethanoic acid
Asid etanoik
- C. Sulphuric acid
Asid sulfurik
- D. Nitric acid
Asid nitrik
50. Which of the following is **true** about the heat of combustion, ΔH , for ethanol, propanol and butanol?
*Antara yang berikut, yang manakah **benar** bagi nilai haba pembakaran, ΔH , bagi etanol, propanol dan butanol?*

	Ethanol <i>Etanol</i>	Propanol <i>Propanol</i>	Butanol <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

Disediakan oleh,

.....

(Pn Suraya bt Said@Shued)

Disemak & Disahkan oleh,

.....

(Pn Hjh Noor Hayati bt Salleh)
GK Sains dan Matematik

END OF QUESTION PAPERS
KERTAS SOALAN TAMAT