

1. Which of these substances is an element?
Antara bahan berikut, yang manakah ialah unsur?

A Carbon dioxide
Karbon dioksida

C Iron
Besi

B Water
Air

D Sugar
Gula

2. The following statement is about an atom.
Pernyataan berikut ialah mengenai suatu atom.

Elements are made up of the smallest particles called atoms.

Unsur terdiri daripada zarah- zarah terkecil yang dinamakan atom.

- Which of the following scientists made the statement?
Antara saintis berikut, yang manakah membuat kenyataan tersebut?

A John Dalton

C Ernest Rutherford

B Neils Bohr

D James Chadwick

3. What is the factor that determines the chemical properties of an element?
Apakah faktor yang menentukan sifat-sifat kimia bagi satu unsur?

A The number of electron shells.
Bilangan petala elektron.

B *The number of electrons in the innermost shell.*
Bilangan elektron dalam petala terdalam.

C The number of electrons in the outermost shell.
Bilangan elektron dalam petala terluar.

D The number of neutrons in the nucleus.
Bilangan neutron dalam nukleus.

4. Elements Q and R have the following compositions as shown in Table 1.
Unsur Q dan R mempunyai komposisi seperti ditunjukkan dalam Jadual 1.

Element Unsur	Elektron Elektron	Neutron Neutron	Proton Proton
Q	35	44	35
R	35	46	35

Table 1 / Jadual 1

Which of the following statements are true about Q and R
Antara pernyataan berikut, yang manakah benar mengenai Q dan R?

- I Q and R are isotopes.
Q dan R ialah isotop.
- II Q and R are positively charged.
Q dan R bercas positif.
- III Q and R are the same element.
Q dan R ialah unsur yang sama.
- IV Q and R have the same nucleon number.
Q dan R mempunyai nombor nukleon yang sama.
- A I and III
I dan III
- B I and IV
I dan IV
- C II and IV
II dan IV
- D III dan IV
III dan IV

5. Which of these elements can form a basic oxide?
Antara sebatian berikut, yang manakah boleh membentuk oksida bersifat bes?

- A Magnesium
Magnesium
- B Aluminium
Aluminium
- C Sulphur
Sulfur
- D Phosphorus
Fosforus

6. Ethane and methane have low melting and boiling points. Ethane and methane are
Etana dan metana mempunyai takat lebur dan takat didih yang rendah. Etana dan metana ialah
- | | |
|--|---|
| A covalent compounds
<i>sebatian kovalen</i> | C ionic compounds
<i>sebatian ionik</i> |
| B metals
<i>logam</i> | D alcohols
<i>alkohol</i> |
7. Copper(II) bromide is an electrolyte. Which of the following is true about copper(II) bromide?
Kuprum(II) bromida ialah suatu elektrolit. Antara berikut, yang manakah benar tentang kuprum(II) bromida?
- A** It conducts electricity in the solid state only.
Mengkonduksikan elektrik dalam keadaan pepejal sahaja.
- B** It conducts electricity in the molten state only.
Mengkonduksikan elektrik dalam keadaan leburan sahaja.
- C** It conducts electricity in the solid and molten states.
Mengkonduksikan elektrik dalam keadaan pepejal dan leburan.
- D** It conducts electricity in the molten state or in an aqueous solution.
Mengkonduksikan elektrik dalam keadaan leburan atau larutan akueus.
8. Which of the following salts can be prepared using the double decomposition method?
Antara garam berikut, yang manakah boleh disediakan melalui kaedah penguraian ganda dua?
- | | |
|--|--|
| A Sodium chloride
<i>Natrium klorida</i> | C Zinc nitrate
<i>Zink nitrat</i> |
| B Barium sulphate
<i>Barium sulfat</i> | D Copper(II) sulphate
<i>Kuprum(II) sulfat</i> |

9. Diagram 1 shows the electrolysis of a copper(II) sulphate solution.
Rajah 1 menunjukkan elektrolisis larutan kuprum(II) sulfat

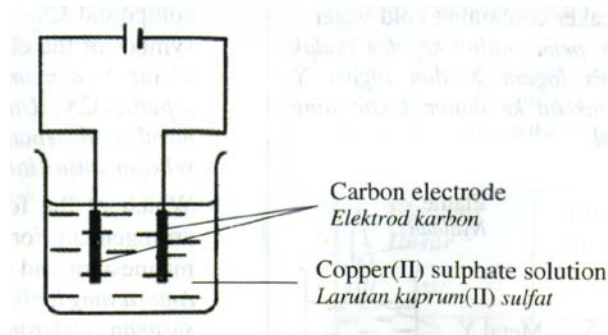


Diagram 1 / Rajah 1

Which half equation represents the reaction at the cathode?
Setengah persamaan yang manakah mewakili tindak balas di katod?

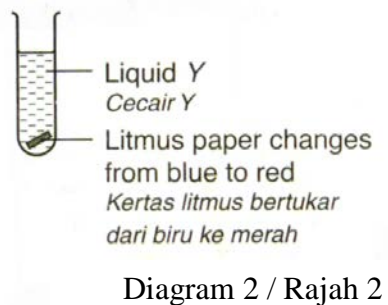
- A** $\text{Cu}^{2+} + 2\text{e} \rightarrow \text{Cu}$
- B** $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}$
- C** $4\text{OH}^- \rightarrow \text{O}_2 + 2\text{H}_2\text{O} + 4\text{e}$
- D** $2\text{H}^+ \rightarrow 2\text{e} + \text{H}_2$
10. Substance *Q* has the following properties:
Bahan Q mempunyai sifat-sifat berikut:

<p>I High density <i>Ketumpatan yang tinggi</i></p> <p>II High refractive index <i>Indeks biasan yang tinggi</i></p>
--

What is substance *Q*?
Apakah itu bahan Q?

- | | |
|--|---|
| A Steel
<i>Keluli</i> | C Fibre glass
<i>Gentian kaca</i> |
| B Lead glass
<i>Kaca plumbum</i> | D Bronze
<i>Gangsa</i> |

11. Diagram 2 shows the effect of liquid Y on a piece of litmus paper.
Rajah 2 menunjukkan kesan cecair Y ke atas suatu kertas litmus.



What is liquid Y?

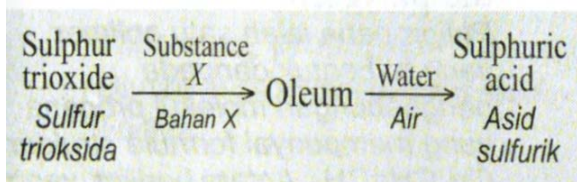
Apakah itu cecair Y?

- A** Ethanoic acid in methylbenzene
Asid etanoik dalam metilbenzena
- B** Hydrogen chloride in benzene
Hidrogen klorida dalam benzene
- C** Sodium hydroxide in water
Natrium hidroksida dalam air
- D** Hydrogen bromide in water
Hidrogen bromida dalam air
- 12 Which of the following does **not** show the oxidation reaction?
Antara yang berikut, yang manakah tidak menunjukkan tindak balas pengoksidaan?
- A** Increase in oxidation number
Pertambahan dalam nombor pengoksidaan
- B** Gaining of oxygen atom
Penerimaan atom oksigen
- C** Gaining of electrons
Penerimaan electron
- D** Loss of hydrogen atom
Kehilangan atom hydrogen

13. When a solution of *R* is added to a solution of *S*, a white precipitate is formed. Which of the following represents *R* and *S*?
 Apabila larutan *R* ditambahkan ke dalam larutan *S*, satu mendakan putih terbentuk. Antara berikut, yang manakah mewakili *R* dan *S*?

	R	S
A	Hydrochloric acid <i>Asid hidroklorik</i>	Sodium hydroxide <i>Natrium hidroksida</i>
B	Sulphuric acid <i>Asid sulfurik</i>	Zinc nitrate <i>Zink nitrat</i>
C	Sodium chloride <i>Natrium klorida</i>	Silver nitrate <i>Argentum nitrat</i>
D	Magnesium nitrate <i>Magnesium nitrat</i>	Sodium chloride <i>Natrium klorida</i>

14. Below is part of the stages in the production of sulphuric acid.
 Diberi di bawah ialah sebahagian daripada tahap-tahap dalam penghasilan asid sulfurik.



What is substance X?
 Apakah itu bahan X?

- A** Oxygen
Oksigen
- B** Sulphur dioxide
Sulfur dioksida
- C** Concentrated sulphuric acid
Asid sulfurik pekat
- D** Concentrated sodium hydroxide
Natrium hidroksida pekat

15. Which of the following factors will affect the rate of reaction between calcium carbonate and hydrochloric acid?

Antara faktor yang berikut, yang manakah akan mempengaruhi kadar tindak balas antara kalsium karbonat dengan asid hidroklorik?

- I The temperature of the acid
Suhu asid
- II The concentration of the acid
Kepekatan asid
- III The particle size of calcium carbonate
Saiz zarah kalsium karbonat
- IV The mass of calcium carbonate
Jisim kalsium karbonat
- A I, II and III
I, II dan III
- B I, II and IV
I, II dan IV
- C I, III and IV
I, III dan IV
- D I, II, III and IV
I, II, III dan IV

16. Which food additive is usually added to preserve sauces such as tomato and chilli sauce?

Bahan tambah makanan yang manakah biasanya digunakan untuk mengawet sos seperti sos tomato dan sos cili?

- A Sodium nitrite
Natrium nitrit
- B Sodium benzoate
Natrium benzoat
- C Ascorbic acid
Asid askorbik
- D Azo compounds
Sebatian azo

17. Diagram 3 shows a graph of volume of hydrogen gas collected against time when zinc reacted with sulphuric acid.
Rajah 3 menunjukkan satu graf isipadu gas hidrogen yang terkumpul melawan masa apabila zink bertindak balas dengan asid sulfurik.

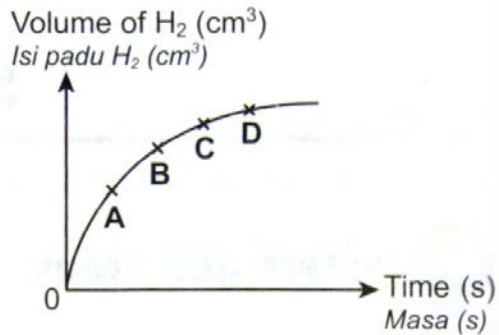


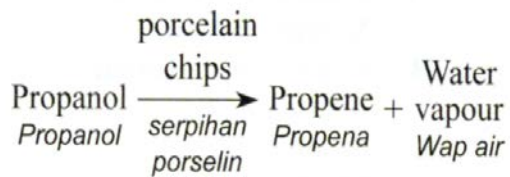
Diagram 3 / Rajah 3

Which of the points A, B, C or D shows the lowest rate of reaction?

Antara titik A, B, C dan D, yang manakah menunjukkan kadar tindak balas yang paling rendah?

18. One mole of nitrogen and one mole of sulphur trioxide have
Satu mol nitrogen dan satu mol sulfur trioksida mempunyai
- A** the same number of molecules.
bilangan molekul yang sama.
 - B** the same number of atoms.
bilangan atom yang sama.
 - C** the same mass.
jisim yang sama.
 - D** the same proton number.
nombor proton yang sama.

19. The chemical equation for a chemical reaction is shown as below.
Persamaan kimia suatu tindak balas kimia ditunjukkan seperti di bawah.



What is the name of the chemical reaction?
Apakah nama tindak balas kimia tersebut?

- A** *Substitution*
Penukargantian
- B** *Dehydration*
Pendehidratan
- C** *Hydration*
Penghidratan
- D** *Oxidation*
Pengoksidaan
20. Which of the following reactions is endothermic?
Antara tindak balas yang berikut, yang manakah adalah endotermik?
- A** $\text{H}_2\text{SO}_4 + 2\text{KOH} \rightarrow \text{K}_2\text{SO}_4$
- B** $\text{Mg} + \text{ZnSO}_4 \rightarrow \text{MgSO}_4 + \text{Zn}$
- C** $2\text{Cu}(\text{NO}_3)_2 \rightarrow 2\text{CuO} + 4\text{NO}_2 + \text{O}_2$
- D** $\text{C}_2\text{H}_5\text{OH} + 3\text{O}_2 \rightarrow 2\text{CO}_2 + 3\text{H}_2\text{O}$

21. The information below is about a traditional medicine.
Maklumat di bawah adalah tentang suatu ubat tradisional.

- Prevents flu
Mencegah selesema
- Helps to reduce high blood pressure
Membantu untuk merendahkan tekanan darah tinggi

Which of the following traditional medicine is related to the information given?
Antara ubat tradisional yang berikut, yang manakah berkaitan dengan maklumat yang diberikan?

- | | |
|--|--|
| <p>A Ginger
<i>Halia</i></p> <p>B Lemon
<i>Limau</i></p> | <p>C Garlic
<i>Bawang putih</i></p> <p>D Quinine
<i>Kuinin</i></p> |
|--|--|
22. Diagram 4 shows the changes in the states of matter for substance X.
Rajah 4 menunjukkan perubahan- perubahan dalam keadaan jirim untuk bahan X.

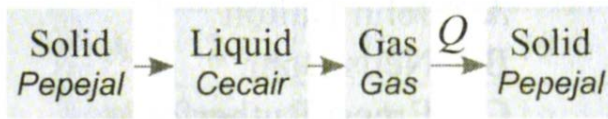
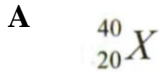


Diagram 4 / Rajah 4

What is process Q?
Apakah itu proses Q?

- | | |
|---|--|
| <p>A Freezing
<i>Pembekuan</i></p> <p>B Sublimation
<i>Pemejalwapan</i></p> | <p>C Melting
<i>Peleburan</i></p> <p>D Boiling
<i>Pendidihan</i></p> |
|---|--|

25. Which of the following elements does **not** combine with other elements to form a compound?
*Antara unsur berikut, yang manakah **tidak** bergabung dengan unsur lain untuk membentuk sebatian?*



26. Chemical bonds **cannot** be formed by
*Ikatan kimia **tidak** boleh dibentuk melalui*

A donating of electrons.
pendermaan elektron.

B sharing of protons.
perkongsian proton.

C transferring of electrons.
pemindahan electron

D sharing of electrons.
perkongsian elektron.

27. A solution of sodium hydroxide has a concentration of 60 g dm^{-3} .
 What is the molarity of the alkali in mol dm^{-3} ?
 [Relative atomic mass of Na = 23, O = 16 and H = 1]

*Satu larutan natrium hidroksida mempunyai kepekatan 60 g dm^{-3} .
 Apakah kepekatan alkali tersebut dalam mol dm^{-3} ?
 [Jisim atom relative bagi Na = 23, O = 16 dan H = 1]*

A 0.5 mol dm^{-3}

B 1.5 mol dm^{-3}

C 1.0 mol dm^{-3}

D 2.0 mol dm^{-3}

30. Diagram 6 shows the volume of gas produced against time when magnesium ribbon is placed in excess hydrochloric acid.

Rajah 6 menunjukkan isi padu gas yang terhasil melawan masa apabila pita magnesium diletakkan ke dalam asid hidroklorik yang berlebihan.

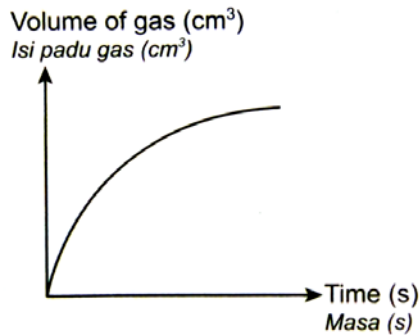


Diagram 6 / Rajah 6

Which of the following statements best explain why the gradient of the graph decreases with time?

Antara pernyataan yang berikut, yang manakah paling baik menjelaskan sebab kecerunan graf berkurang dengan masa?

- A** The volume of mixture decreases.
Isi padu campuran berkurangan.
- B** The concentration of hydrochloric acid decreases.
Kepekatan asid hidroklorik berkurangan
- C** Magnesium powder is not used.
Serbuk magnesium tidak digunakan.
- D** The temperature of the mixture decreases.
Suhu campuran berkurangan.

31. A sample of methane reacted with excessive chlorine gas with the presence of ultraviolet light. A mixture of four different products are formed. Which of the following compounds is **not** the product formed?
Suatu sampel metana bertindak balas dengan gas klorin berlebihan dengan kehadiran cahaya ultraungu. Suatu campuran yang terdiri daripada empat hasil yang berlainan terbentuk. Antara sebatian yang berikut, yang manakah bukan hasil yang terbentuk?
- A** Chloromethane
Klorometana
- B** Tetrachloromethane
Tetraklorometana
- C** Ethene
Etena
- D** Hydrogen chloride
Hidrogen klorida
32. Which of the following half-equations represents the reaction that occurred at anode of a Daniell cell using zinc plate and copper plate as electrodes?
Antara setengah persamaan yang berikut, yang manakah mewakili tindak balas yang berlaku di anod pada set Daniell yang menggunakan kepingan zink dan kepingan kuprum sebagai elaktrod?
- A** $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}$
- B** $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}$
- C** $\text{Cu}^{2+} + 2\text{e} \rightarrow \text{Cu}$
- D** $\text{Zn}^{2+} + 2\text{e} \rightarrow \text{Zn}$

33. Diagram 7 shows the structural formulae of two isomers.
Rajah 7 menunjukkan formula struktur bagi dua isomer.

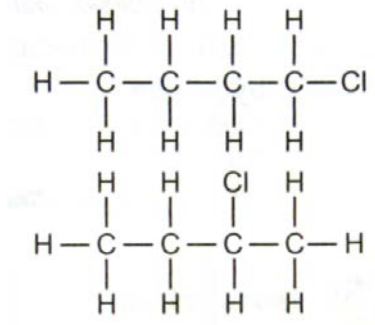


Diagram 7 / Rajah 7

The name for both isomers is
Nama kedua-dua isomer ialah

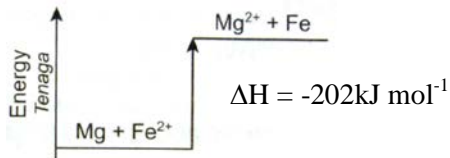
- A** chlorobutane
klorobutana
- B** chlorobutene
klorobutena
- C** chloropentane
kloropentana
- D** chloropentene
kloropentena

34. The reaction between magnesium metal and iron(II) sulphate solution is an exothermic reaction. The heat of reaction is -202 kJ mol^{-1} .

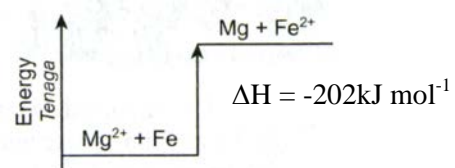
Which of the following energy level diagrams represents the reaction?

Tindak balas antara logam magnesium dengan larutan ferum(II) sulfat ialah suatu tindak balas eksotermik. Haba tindak balasnya ialah -202 kJ mol^{-1} . Antara gambar rajah aras tenaga yang berikut, yang manakah mewakili tindak balas tersebut?

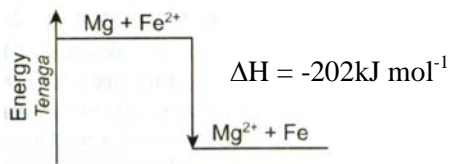
A



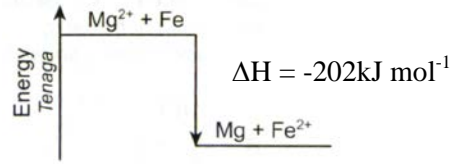
C



B



D



35. Ceiling plaster is made of a substance with the chemical formula $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$.

What is the relative formula mass of ceiling plaster?

[Relative atomic mass of Ca = 40, S = 32, O = 16 and H = 1]

Plaster siling diperbuat daripada satu bahan yang mempunyai formula kimia $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$.

Apakah jisim formula relative bagi plaster siling?

[Jirim atom relatif bagi Ca = 40, S = 32, O = 16 dan H = 1]

A 136

B 172

C 154

D 190

36. Diagram 8 shows the cleansing action of soap on grease.
Rajah 8 menunjukkan tindakan pencuci sabun terhadap gris

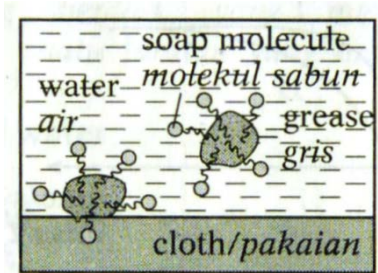


Diagram 8 / Rajah 8

Which of the followings statements about the cleansing action is **not** true?
*Antara penyataan berikut, yang manakah **tidak** benar tentang tindakan pencucian ini?*

- A** The hydrophobic parts of the soap molecules dissolve in grease.
Bahagian hidrofobik molekul sabun larut dalam gris.
- B** The soap emulsifies the grease.
Sabun mengemulsikan gris.
- C** The grease will be discharged together with the water.
Gris disingkirkan bersama air.
- D** The surface tension of the water is increased by the soap.
Tegangan permukaan air ditambah oleh sabun.

37. Table 3 shows the particle composition of elements X and Y.
Jadual 3 menunjukkan komposisi zarah untuk unsur X dan Y.

Element <i>Unsur</i>	Electron <i>Elektron</i>	Neutron <i>Neutron</i>	Proton <i>Proton</i>
X	10	8	10
Y	9	10	9

Table 3 / *Jadual 3*

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

- A** X and Y are both positively charged.
X dan Y bercas positif.
- B** X and Y have the same proton number.
X dan Y mempunyai nombor proton yang sama.
- C** X and Y are different elements.
X dan Y ialah unsur yang berbeza.
- D** X has a nucleon number of 20.
Nombor nukleon bagi X ialah 20
38. 5.40 g of element X reacts completely with 4.80 g of element Y. What is the empirical formula of the compound produced? [Relative atomic mass of X=27 and Y= 16]
5.40 g unsur P bertindak balas dengan lengkap dengan 4.80 g unsur Y. Apakah formula empirik bagi sebatian yang terbentuk?
[Jisim atom relatif bagi X = 27 dan Y= 16]
- A** XY
- B** X₂Y
- C** XY₂
- D** X₂Y₃

39. The electron arrangement of atom X is 2.8.6 and the electron arrangement of atom Y is 2.7. Elements X and Y react to form a compound.

Which of the following is true about the reaction?

Susunan elektron atom X ialah 2.8.6. dan susunan elektron atom Y ialah 2.7.

Unsur X dan Y bertindak balas untuk membentuk satu sebatian.

Antara berikut, yang manakah benar tentang tindak balas ini?

- A** Atom X receives two electrons.
Atom X menerima dua elektron.
- B** Atom Y receives one electron.
Atom Y menerima satu elektron.
- C** Covalent compound is formed.
Satu sebatian kovalen terbentuk.
- D** The compound formed has a chemical formula of X_2Y .
Sebatian yang terbentuk mempunyai formula kimia X_2Y .

40. Table 4 shows the pH values of four solutions which have the same concentrations.
Jadual 4 menunjukkan nilai-nilai pH untuk empat larutan yang mempunyai kepekatan yang sama.

<i>Solution/ larutan</i>	<i>P</i>	<i>Q</i>	<i>R</i>	<i>S</i>
<i>pH value / Nilai pH</i>	2	5	7	13

Table 4 / Jadual 4

Which of the two solutions when mixed would produce a neutral solution?

Antara dua larutan tersebut, yang manakah akan menghasilkan satu larutan neutral apabila dicampurkan?

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

41. Diagram 9 shows the set up of the apparatus used to build a chemical cell.
Rajah 9 menunjukkan susunan radas untuk membina sel kimia.

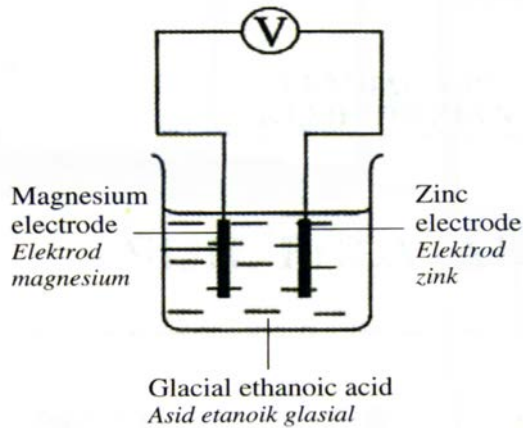


Diagram 9 / Rajah 9

It was found that there is no deflection on the voltmeter needle.

What should be done to make sure that the voltmeter needle deflects?

Didapati tiada pesongan pada jarum voltmeter.

Apakah perlu dilakukan untuk memastikan jarum voltmeter terpesong?

- A** Add water into the glacial ethanoic acid
Tambahkan air ke dalam asid etanoik glasial
- B** Add dry cells in series in the circuit
Tambahkan sel kering secara bersiri ke dalam litar
- C** Substitute the zinc electrode with an aluminium electrode
Gantikan elektrod zink dengan elektrod aluminium
- D** Substitute the magnesium electrode with an iron electrode
Gantikan elektrod magnesium dengan elektrod ferum

46. The rubber gloves used by doctors during surgery are made from vulcanised rubber. What is the property of vulcanised rubber makes it suitable to be used for making these gloves?
Sarung tangan getah yang digunakan oleh doktor semasa pembedahan diperbuat daripada getah tervulkan.
Apakah sifat getah tervulkan yang menyebabkannya sesuai dalam pembuatan sarung tangan ini?
- A** Harder than unvulcanised rubber
Lebih keras daripada getah tak tervulkan
 - B** Stronger than unvulcanised rubber
Lebih kuat daripada getah tak tervulkan
 - C** Heat-resistant
Tahan haba
 - D** Oxidation-resistant
Tahan pengoksidaan
47. A factory worker suffers a cut on his hand. His hand is swollen and painful. What medicine is suitable to be given to the factory worker?
Seorang pekerja kilang mengalami luka pada tangannya. Tangannya bengkak dan sakit.
Ubat yang manakah paling sesuai diberikan kepada pekerja kilang tersebut?
- A** Amphetamine
Amfetamin
 - B** Paracetamol
Parasetamol
 - C** Tranquiliser
Trankuilizer
 - D** Streptomycin
Streptomisin

50. The following information shows the results of an experiment to determine the heat combustion of methanol.

Maklumat yang berikut menunjukkan keputusan suatu eksperimen untuk menentukan haba pembakaran bagi metanol.

Volume of water in the copper can <i>Isi padu air dalam tin kuprum</i>	= 400 cm^3
Initial temperature of water in the copper can <i>Suhu awal air dalam tin kuprum</i>	= 28.5°C
Final temperature of water in the copper can <i>Suhu akhir air dalam tin kuprum</i>	= 61.5°C

What is the heat released by the combustion of methanol?

[Specific heat capacity of water = $4.2 \text{ J g}^{-1}\text{C}^{-1}$ Water density = 1 g cm^{-3})

Berapa banyakkah haba yang dibebaskan oleh pembakaran metanol?

[Muatan haba tentu larutan = $4.2 \text{ J g}^{-1}\text{C}^{-1}$ Ketumpatan air = 1 g cm^{-3}]

A 47.88 kJ

C 151.2 kJ

B 55.44 kJ

D 103.32 kJ

**END OF QUESTION PAPER
KERTAS SOALAN TAMAT**