NAMA:..... Tingkatan :.....

SULIT
4541/1
Chemistry
Kertas 1
Ogos
2009
2 ½ jam

BAHAGIAN PENGURUSAN
SEKOLAH BERASRAMA PENUH DAN SEKOLAH KLUSTER
KEMENTERIAN PELAJARAN MALAYSIA

PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA 2009

CHEMISTRY
Kertas 1

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. Kertas soalan ini mengandungi **50** soalan.

2. Jawab **semua** soalan

3. 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. Jika anda hendak menukar jawapan, padamkan tanda yang telah dibuat, kemudian hitamkan jawapan yang baru.

5. Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan

6. Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan.

Kertas soalan ini mengandungi **28** halaman bercetak

1 Diagram 1 shows the particles arrangement for the change of state of matter.
Rajah 1 *menunjukkan susunan zarah untuk perubahan keadaan jirim.*

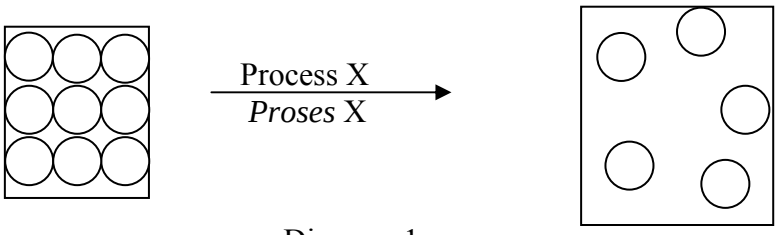


Diagram 1
Rajah 1

Which of the following is process X?
Antara berikut yang manakah proses X*?*

A Evaporation
Penyejatan

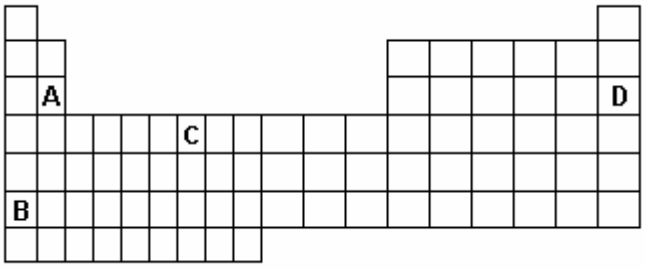
B Sublimation
Pemejalwapan

C Condensation
Kondensasi

D Boiling
Pendidihan

2 Which of the following shows an element in the Periodic Table of Elements with different oxidation numbers in its compounds?

Antara yang berikut yang manakah menunjukkan unsur dalam Jadual Berkala Unsur yang mempunyai nombor pengoksidaan yang berbeza dalam sebatian-sebatiannya?



3 Diagram 2 shows the set-up of apparatus to determine the empirical formula of magnesium oxide.

Rajah 2 *menunjukkan susunan radas untuk menentukan formula empirik magnesium oksida.*

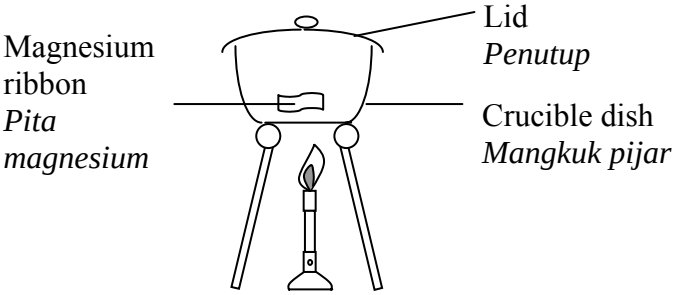


Diagram 2
Rajah 2

Which of the following statements is **true** for the lifting and closing of the lid quickly and occasionally during heating?

Antara pernyataan berikut yang manakah ***benar*** *bagi penutup diangkat dan ditutup dengan cepat sekali sekala semasa pemanasan?*

A To avoid the pressure in the crucible dish
Untuk mengelak tekanan dalam mangkuk pijar

B To avoid the crucible dish from cracking
Untuk mengelak mangkuk pijar dari retak

C To avoid the white fumes from escaping
Untuk mengelak wasap putih daripada terbebas keluar

D To avoid water vapour from entering the crucible dish
Untuk mengelak wap air daripada memasuki mangkuk pijar

4 Which of the following salts is insoluble in water?
Antara garam berikut yang manakah tidak larut dalam air?

A Copper(II) sulphate
Kuprum(II) sulfat

B Silver nitrate
Argentum nitrat

C Lead(II) chloride
Plumbum(II) klorida

D Potassium iodide
Kalium iodida

5 Diagram 3 shows the atomic symbol of element X.
Rajah 3 menunjukkan simbol bagi atom unsur X.

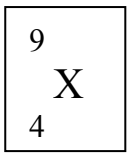


Diagram 3
Rajah 3

Which of the following is true about the sub-atomic particles of element X?
Antara berikut yang manakah benar mengenai zarah-zarah sub-atom bagi unsur X?

	Proton number ***Nombor proton***	**Nucleon number** ***Nombor nukleon***	**Electron arrangement** ***Susunan elektron***
A	4	9	2.2
B	4	9	2.7
C	9	4	2.2
D	9	4	2.7

6 A student dissolved hydrogen chloride gas into tetrachloromethane.
Which of the following statements is true of the solution obtained?

Seorang pelajar melarutkan gas hidrogen klorida ke dalam tetraklorometana.
Antara pernyataan berikut yang manakah benar bagi larutan yang terhasil?

A It does not conduct electricity
Ia tidak mengkonduksikan elektrik

B It turns dry blue litmus paper to red
Ia menukarkan kertas litmus biru kering ke merah

C There is effervescence when calcium carbonate powder is added to it
Pembuakan berlaku apabila serbuk kalsium karbonat di tambahkan ke dalam larutan tersebut

D The hydrochloric acid molecules undergo complete dissociation
Molekul asid hidroklorik mengalami penceraian lengkap

7 Diagram 4 shows the set-up of the apparatus for electrolysis.
Diagram 4 *menunjukkan susunan radas bagi elektrolisis.*

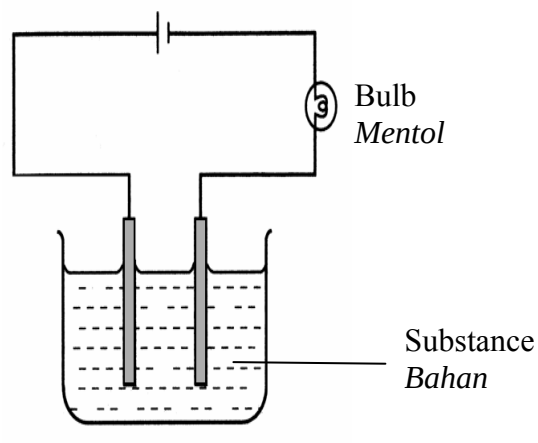


Diagram 4
Rajah 4

Which of the following substances could light up the bulb?
Antara bahan berikut yang manakah boleh menyalakan mentol?

A Propanol
Propanol

B Glucose solution
Larutan glukosa

C Glacial ethanoic acid
Asid etanoik glasial

D Sodium chloride solution
Larutan natrium klorida

8 Which of the following pairs of elements is **correct** for the type of alloy?
Antara pasangan unsur berikut yang manakah ***betul*** *untuk jenis aloi*?

	Main Element ***Unsur utama***	**Element added** ***Unsur yang ditambah***	**Type of alloy** ***Jenis aloi***
A	Copper *Kuprum*	Zinc *Zink*	Brass *Loyang*
B	Copper *Kuprum*	Iron *Ferum*	Bronze *Gangsa*
C	Tin *Stanum*	Carbon *Karbon*	Pewter *Pewter*
D	Iron *Ferum*	Tin *Stanum*	Steel *Keluli*

9 The following equation shows the reaction between calcium carbonate , $CaCO_3$ and hydrochloric acid, HCl :

Persamaan berikut menunjukkan tindak balas antara kalsium karbonat, $CaCO_3$ *dan asid hidroklorik,* HCl :

$$CaCO_{3(aq)} + 2HCl_{(aq)} \rightarrow CaCl_{2(aq)} + CO_{2\,(g)} + H_2O_{(l)}$$

Which of the following is the suitable method to determine the rate of reaction?
Antara berikut yang manakah kaedah yang sesuai untuk menentukan kadar tindak itu?

A Change in the temperature of the solution with time
Perubahan dalam suhu bagi larutan dengan masa

B Change in the volume of carbon dioxide gas with time
Perubahan isi padu gas karbon dioksida dengan masa

C Change in the mass of water with time
Perubahan jisim air dengan masa

D Change in the concentration of hydrochloric acid with time
Perubahan kepekatan asid hidroklorik dengan masa

10 The following chemical equation shows a reaction for ethanol.
Persamaan kimia berikut menunjukkan satu tindak balas bagi etanol.

$$C_2H_5OH(l) \quad \rightarrow \quad C_2H_4(g) + H_2O(l)$$

What is the name of the reaction?
Apakah nama bagi tindak balas itu?

A Oxidation
Pengoksidaan

B Reduction
Penurunan

C Dehydration
Pendehidratan

D Fermentation
Penapaian

11 Which of the following is a reduction process?
Antara yang berikut yang manakah proses penurunan?

A A copper(II) ion gains two electrons
Ion kuprum(II) menerima dua elektron

B Hydrogen sulphide loses its hydrogen
Hidrogen sulfida kehilangan hidrogen

C Iron(II) ion converted to iron(III) ion
Ion ferum(II) bertukar kepada ion ferum(III)

D A magnesium atom loses two electrons
Satu atom magnesium kehilangan dua elektron

12 Which of the following is true when ammonium nitrate dissolves in water in a test tube, the test tube becomes cold?
Antara berikut yang manakah betul apabila ammonium nitrat dilarutkan ke dalam air dalam sebuah tabung uji, tabung uji menjadi sejuk?

A The ions move slower.
Ion bergerak perlahan.

B Water absorbs heat energy.
Air menyerap tenaga haba.

C Heat energy is lost to the surroundings.
Haba hilang ke persekitaran.

D Heat energy is absorbed from the surroundings.
Tenaga haba diserapdaripada persekitaran.

13 Which of the following characteristics shows that salt is used as food preservative.?
Antara cir-ciri berikut yang manakah menunjukkan bahawa garam digunakan sebagai pengawet makanan?

A Presence of chlorine
Kehadiran klorin

B Saltiness
Rasa masin

C Dehydrating property
Bersifat pengontang

D Toxicity
Bertoksid

14 Diagram 5 shows the symbol for atom Y.
Rajah 5 menunjukkan simbol bagi satu atom Y.

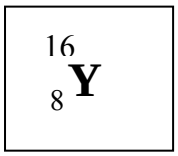
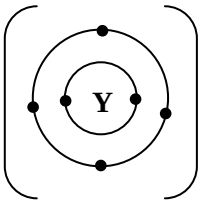


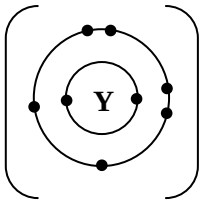
Diagram 5
Rajah 5

Which of the following represents the electron arrangement for ion Y^{2-}?
Antara berikut yang manakah menunjukkan susunan elektron ion Y^{2-}?

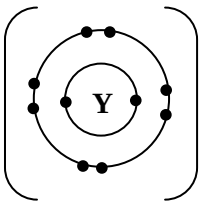
A



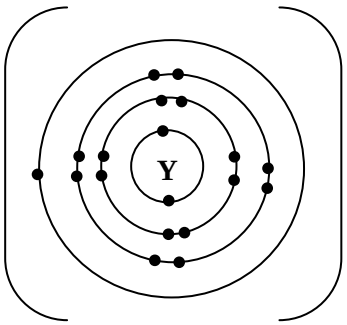
B



C



D



15 Table 1 shows the mass of elements M and O in an oxide of M, and the relative atomic mass of elements M and O.
Jadual 1 *menunjukkan jisim unsur M dan O yang terdapat dalam oksida M, dan jisim atom relatif bagi unsur M dan O.*

Element ***Unsur***	M	O
Mass/ g *Jisim/ g*	1.62	1.44
Relative atomic mass *Jisim atom relatif*	27	16

Table 1
Jadual 1

Which of the following formulae is the empirical formula for the oxide of M?
Antara berikut yang manakah adalah formula empirik bagi oksida M?

A MO

B MO_2

C M_2O

D M_2O_3

16 The electron arrangements of atoms of elements P and Q are 2.4 and 2.6 respectively. Which of the following statements is **true** about the compound formed between P and Q?

Susunan elektron bagi atom unsur P *dan* Q *masing-masing adalah* 2.4 *dan* 2.6.
Antara pernyataaan yang berikut yang manakah ***benar*** *tentang sebatian yang terbentuk antara sebatian* P *dan* Q?

A Each atom Q receives an electron from one atom P
Setiap atom Q *menerima satu elektron dari atom* P

B Each atom P receives four electrons from one atom Q
Setiap atom P *menerima empat elektron dari atom* Q

C Each atom P combines with two atoms Q by sharing of electrons
Setiap atom P *bergabung dengan dua atom* Q *melalui perkongsian elektron*

D Each atom P combines with one atom Q by transfer of electrons
Setiap atom P *bergabung dengan satu atom* Q *melalui pemindahan elektron*

17 The chemical equation below shows a reaction between chlorine and iron.
Which of the following is the formula of the product?
Persamaan kimia di bawah menunjukkan suatu tindak balas antara klorin dengan besi.
Antara berikut yang manakah formula hasil tindak balas itu?

$$Cl_2(g) + Fe(s) \rightarrow \square$$

A FeO

B Fe_2O_3

C $FeCl_2$

D $FeCl_3$

18 Diagram 6 shows the electrolysis of 1.0 mol dm^{-3} potassium iodide solution.
Rajah 6 *menunjukkan elektrolisis bagi larutan kalium iodida* 1.0 mol dm^{-3}.

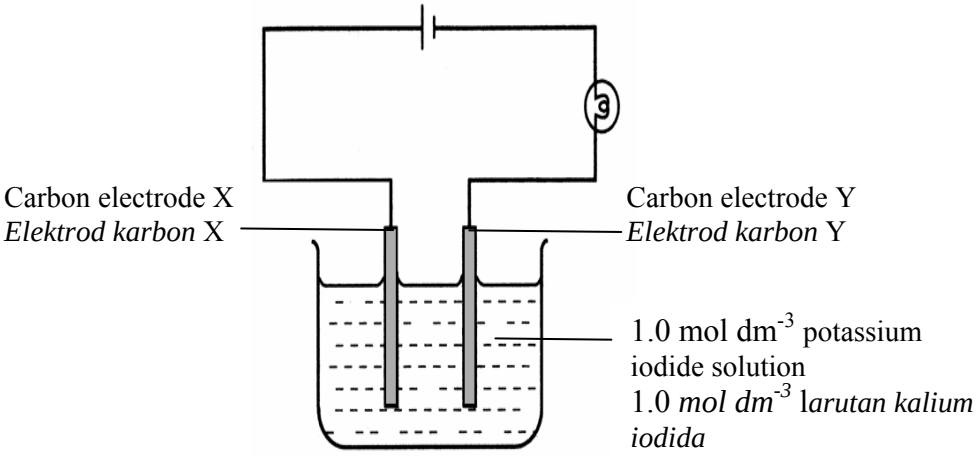


Diagram 6
Rajah 6

Which of the following are the products formed at the carbon electrodes X and Y?
Antara berikut yang manakah hasil yang terbentuk pada elektrod karbon X *dan* Y?

	Carbon electrode X ***Elektrod karbon* X**	**Carbon electrode Y** ***Elektrod karbon* Y**
A	Oxygen *Oksigen*	Hydrogen *Hidrogen*
B	Iodine *Iodin*	Hydrogen *Hidrogen*
C	Hydrogen *Hidrogen*	Oxygen *Oksigen*
D	Iodine *Iodin*	Potassium *Kalium*

19 Table 2 shows the concentration and pH value of hydrochloric acid and ethanoic acid
Jadual 2 menunjukkan kepekatan dan nilai pH bagi asid hidroklorik dan asid etanoik

Type of acid ***Jenis asid***	**Concentration / mol dm^{-3}** ***Kepekatan* / mol dm^{-3}**	**pH value** ***nilai pH***
Hydrochloric ric acid *Asid hidroklorik*	0.1	1
Ethanoic acid *Asid etanoik*	0.1	4

Table 2
Jadual 2

Which of the following statements are **true** about both acids?
*Antara pernyataan berikut yang manakah **benar** tentang kedua-dua asid*?

I Hydrochloric acid is a stronger acid compared to ethanoic acid.
Asid hidroklorik adalah asid lebih kuat berbanding asid etanoik.

II Concentration of hydrogen ions is higher in hydrochloric acid compared with ethanoic acid.
Kepekatan ion hydrogen lebih tinggi dalam asid hidroklorik berbanding dengan asid etanoik.

III The degree of dissociation of hydrochloric acid in water is higher than ethanoic acid.
Darjah penceraian asid hidroklorik dalam air lebih tinggi berbanding asid etanoik.

IV Both acids can neutralized an alkali to produce salt and water
Kedua-dua asid dapat meneutralkan alkali untuk menghasilkan garam dan air

A I and III

B III and IV

C I, II and III

D I, II, III and IV

20 Diagram 7 shows the set up of the apparatus for the action of heat on substance W. After a few minutes lime water turns cloudy.
Rajah 7 menunjukkan susunan radas bagi kesan haba ke atas bahan W. Selepas beberapa minit air kapur menjadi keruh.

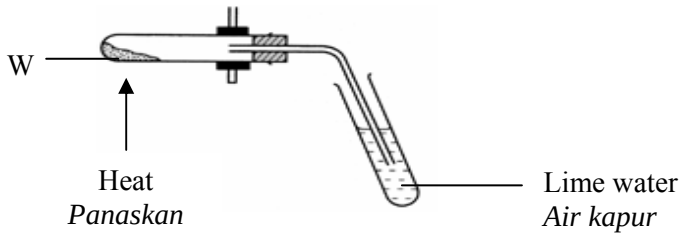


Diagram 7
Rajah 7

Which of the following salts could be W?
Antara garam-garam berikut yang manakah mungkin W?

I Lead(II) nitrate
Plumbum(II) nitrat

II Zinc carbonate
Zink karbonat

III Copper(II) carbonate
Kuprum(II) *karbonat*

IV Potassium carbonate
Kalium karbonat

A I and IV

B II and III

C I, II and III

D II, III and IV

21 A substance has the following properties:
Suatu bahan mempunyai ciri-ciri berikut:

- Hard and opaque
  Keras dan tak lutcahaya
- Good insulator of heat and electricity
  Penebat haba dan elektrik yang baik
- Inert towards chemicals
  Lengai terhadap bahan kimia

Which of following substances has the above properties?
Antara bahan-bahan berikut yang manakah mempunyai ciri-ciri seperti di atas?

A Ceramics
Seramik

B Glass
Kaca

C Metal
Logam

D Polymer
Polimer

22 The following equation shows the redox reaction between copper and silver nitrate solution.
Persamaan berikut menunjukkan tindak balas redok antara kuprum dengan larutan argentum nitrat.

$$Cu + 2AgNO_3 \rightarrow Cu(NO_3)_2 + 2Ag$$

Which of the following statements is **true** about this reaction?
*Antara pernyataan berikut yang manakah **benar** mengenai tindak balas ini?*

A Silver ion is oxidised
Ion argentum dioksidakan

B Copper is the oxidising agent
Kuprum adalah agen pengoksidaan

C The oxidation number of copper increases
Nombor pengoksidaan bagi kuprum bertambah

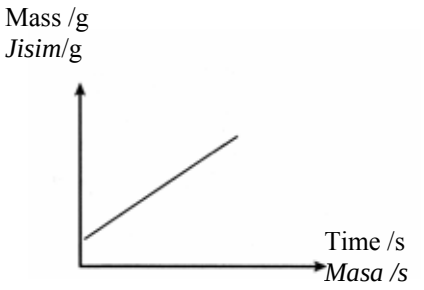
D The oxidation number of nitrogen decreases
Nombor pengoksidaan bagi nitrogen berkurang

23 The following equation shows the reaction between excess zinc powder and dilute nitric acid:
Persamaan berikut menunjukkan tindak balas antara serbuk zink berlebihan dengan asid nitrik:

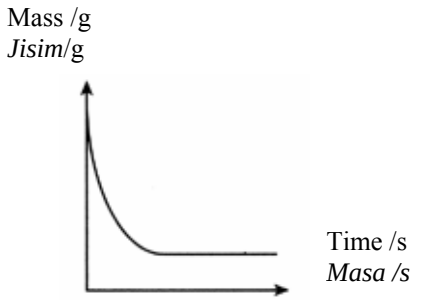
$$Zn\ (s) + 2HNO_3\ (aq) \rightarrow Zn(NO_3)_2\ (aq) + H_2\ (g)$$

Which of the following graphs represents the mass of zinc against time?
Antara graf berikut yang manakah mewakili jisim zink melawan masa?

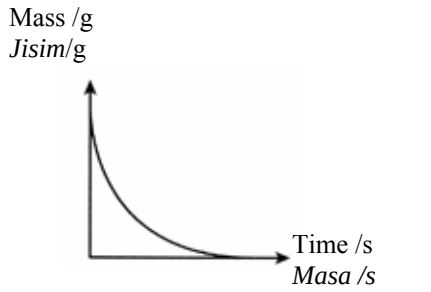
A



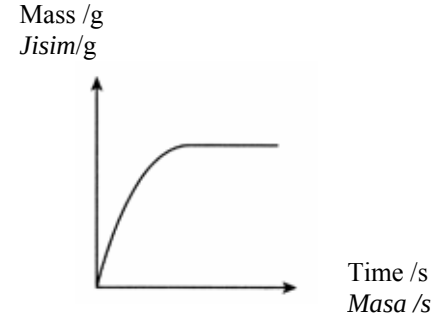
B



C



D

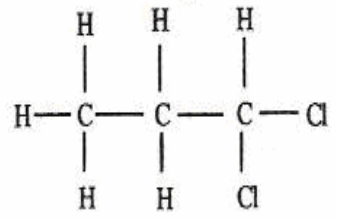


24 The following equation represents the reaction between propene and chlorine.
Persamaan berikut mewakili tindak balas antara propena dan klorin.

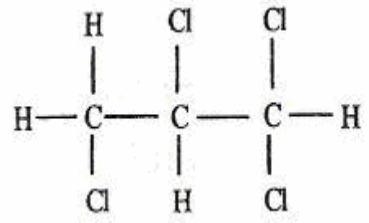
$$\text{Propene} + Cl_2 \rightarrow Z$$

Which of the following is the structural formula for Z?
Antara berikut yang *manakah adalah formula struktur bagi Z*?

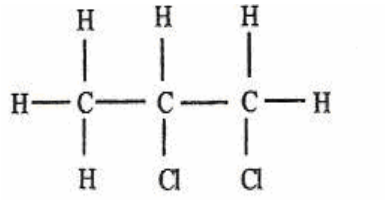
A



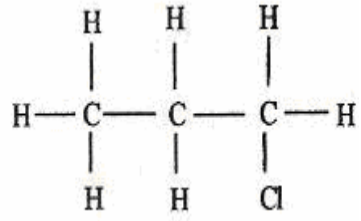
B



C



D



25 Table 3 shows the reactants and heat of neutralization of the reaction between sodium hydroxide solution with methanoic acid and hydrochloric acid.
Jadual 3 menunjukkan bahan tindak balas dan haba peneutralan bagi tindak balas antara larutan natrium hidroksida dengan asid metanoik dan asid hidroklorik.

Reactants ***Bahan tindak balas***	**Heat of neutralization/ kJ mol^{-1}** ***Haba peneutralan/ kJ mol^{-1}***
Methanoic acid and sodium hydroxide solution *Asid metanoik dan larutan natrium hidroksida*	- 54.0
Hydrochloric acid and sodium hydroxide solution *Asid hidroklorik dan larutan natrium hidroksida*	-57.0

Table 3
Jadual 3

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

A Methanoic acid partially dissociates in water
Asid metanoik tercerai separa di dalam air

B Methanoic acid releases energy to the surrounding
Asid metanoik membebaskan tenaga ke persekitaran

C Methanoic acid produces H^+ ions which can be replaced by Na^+ ions
Asid metanoik menghasilkan ion H^+ *yang boleh menggantikan ion* Na^+

D Methanoic acid absorbed some of the heat energy released to complete its dissociation in water
Asid metanoik menyerap sebahagian daripada tenaga yang dibebaskan untuk melengkapkan penceraiannya dalam air

26 Diagram 8 shows the structure of a detergent ion.
Rajah 8 *menunjukkan struktur bagi satu ion detergen.*

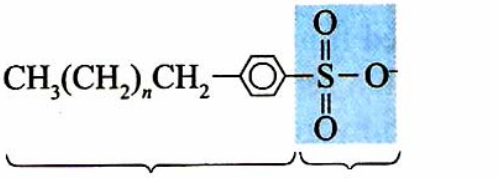


Diagram 8
Rajah 8

Which of the following statements explains the diagram?
Antara pernyataan berikut yang manakah menerangkan rajah tersebut?

A Parts X and Y are soluble in water
Bahagian X dan bahagian Y larut dalam air

B Parts X and Y are soluble in grease
Bahagian X dan bahagian Y larut dalam gris

C Part X is soluble in grease and part Y is soluble in water
Bahagian X larut dalam gris tetapi bahagian Y larut dalam air

D Part X is soluble in water and part Y is soluble in grease
Bahagian X larut dalam air tetapi bahagian Y larut dalam gris

27 The electron arrangement of atom Z is 2.8.1
Which of the following is the number of protons and electrons of Z^+ ion?

Susunan elektron atom Z ialah 2.8.1
Antara berikut yang manakah bilangan proton dan elektron bagi ion Z^+?

	Number of proton ***Bilangan proton***	**Number of electron** ***Bilangan elektron***
A	10	11
B	11	11
C	11	10
D	10	12

28 Diagram 9 shows the symbols for elements X and Y.
Rajah 9 menunjukkan simbol bagi unsur X *dan* Y.

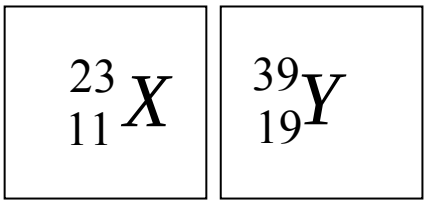


Diagram 9
Rajah 9

Which of the following is true about elements X and Y?
Antara berikut yang manakah adalah benar bagi unsur X *dan* Y?

A Element X is less reactive than element Y
Unsur X adalah kurang reaktif daripada unsur Y

B Both elements X and Y are monoatomic gas
Kedua-dua unsur X dan Y adalah gas monoatom

C Both elements X and Y are non metal
Kedua-dua unsur X dan Y adalah bukan logam

D Element X reacts with element Y to form an ionic compound
Unsur X bertindak balas dengan unsur Y untuk membentuk sebatian ion.

29 10 g of metal oxide with a formula of MO can be completely reduced to 8 g of metal M. What is the relative atomic mass of M?
10 g *oksida logam dengan formula* MO *boleh diturunkan kepada* 8 g *logam* M.
Apakah jisim atom relatif bagi M?

[Relative atomic mass: O = 16]
[*Jisim atom relatif* : O = 16]

A 32
B 40
C 64
D 80

30 Diagram 10 shows the electron arrangement of a compound formed between atoms X and Y.
Rajah 10 *menunjukkan susunan elektron bagi sebatian yang terbentuk antara atom* X *and* Y.

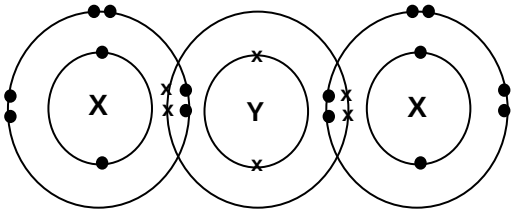


Diagram 10
Rajah 10

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

A It is an ionic compound
Sebatian itu adalah sebatian ionik

B The compound is formed by covalent bonds
Sebatian itu terbentuk melalui ikatan kovalen

C The compound has a high boiling point
Sebatian itu mempunyai takat didih yang tinggi

D The compound is formed by electron transfer
Sebatian itu terbentuk melalui pemindahan elektron

31 What is the volume of 2.0 mol dm^{-3} potassium hydroxide solution is needed to prepare 500 cm^3 of 0.1 mol dm^{-3} potassium hydroxide solution.
Berapakah isipadu larutan kalium hidroksida 2.0 mol dm^{-3} *yang diperlukan untuk menyediakan* 500 cm^3 *larutan kalium hidroksida* 0.1 mol dm^{-3}.

A 25 cm^3
B 50 cm^3
C 100 cm^3
D 500 cm^3

32 Diagram 11 shows the electrolysis of copper(II) nitrate solution using copper as electrodes.
Rajah 11 *menunjukkan elektrolisis bagi larutan kuprum*(II) *nitrat dengan menggunakan elektrod-elektrod kuprum..*

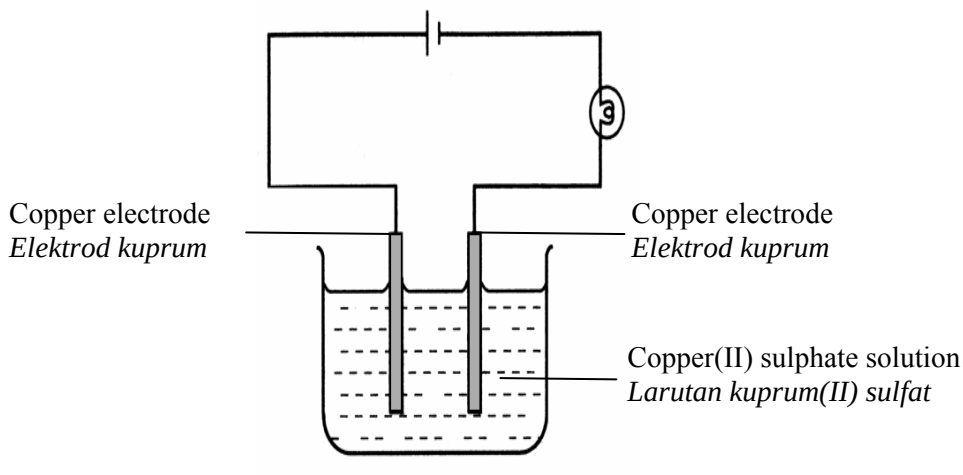


Diagram 11
Rajah 11

Which of the following half equations represents the reactions at the anode and cathode?
Antara setengah persamaan berikut yang manakah mewakili tindak balas di anod dan katod?

	Anode ***Anod***	**Cathode** ***Katod***
A	$4OH^- \rightarrow 2H_2O + O_2 + 4e$	$2H^+ + 2e \rightarrow H_2$
B	$Cu \rightarrow Cu^{2+} + 2e$	$Cu^{2+} + 2e \rightarrow Cu$
C	$4OH^- \rightarrow 2H_2O + O_2 + 4e$	$Cu^{2+} + 2e \rightarrow Cu$
D	$Cu \rightarrow Cu^{2+} + 2e$	$2H^+ + 2e \rightarrow H_2$

33 Which of the following substances can be used to differentiate between sodium sulphate solution and sodium chloride solution?
Antara bahan berikut yang manakah boleh digunakan untuk membezakan larutan natrium sulfat dan larutan natrium klorida?

A Dilute nitric acid
Asid nitrik cair

B Barium nitrate solution
Larutan barium nitrat

C Potassium iodide solution
Larutan kalium iodida

D Magnesium nitrate solution
Larutan magnesium nitrat

34 Diagram 12 shows an energy profile diagram. E_a is the activation energy for the decomposition of hydrogen peroxide.
Rajah 12 *menunjukkan suatu gambar rajah profil tenaga.* E_a *bagi penguraian hidrogen peroksida.*

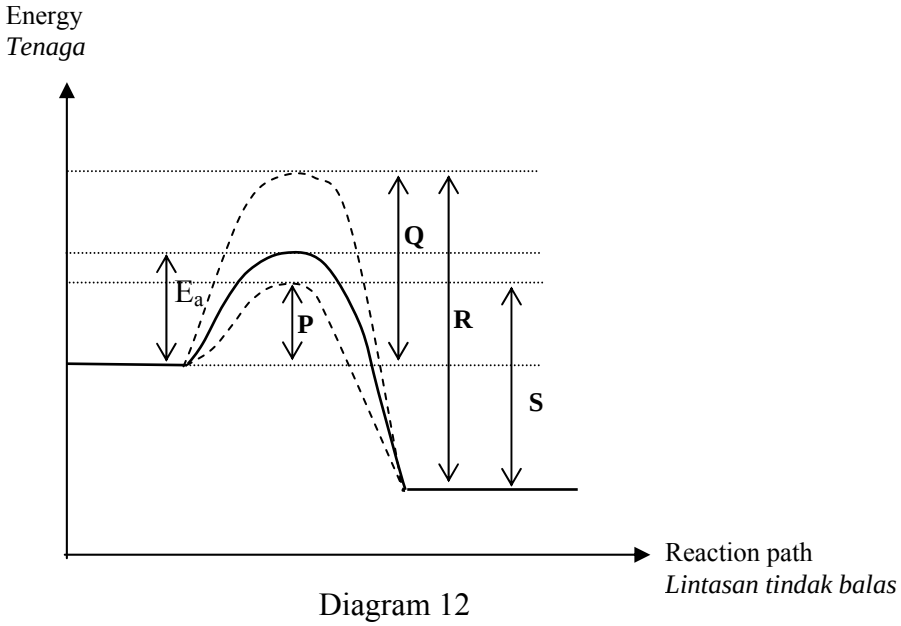


Diagram 12
Rajah 12

Which of the following is the activation energy for the dissociation of hydrogen peroxide when manganese(IV) oxide is added?
*Antara berikut yang manakah tenaga pengaktifan bagi penguraian hydrogen peroksida apabila mangan(*IV*) oksida ditambahkan*?

A P
B Q
C R
D S

35 Diagram 13 shows the structural formula of pent-1-ene.
Rajah 13 *menunjukkan formula struktur bagi pent*-1-*ena*.

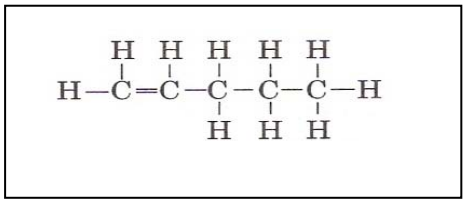
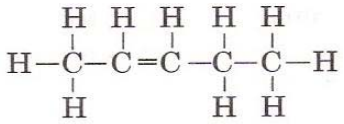


Diagram 13
Rajah 13

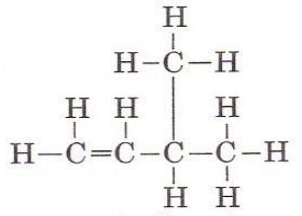
Which of the following are the structural formulae and names for the isomers of pent-1-ene?
Antara berikut yang manakah adalah formula struktur dan nama isomer bagi pent-1-*ena?*

I



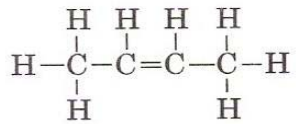
Pent-2-ene

II



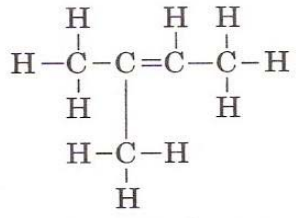
3-methylbut-1-ene

III



Pent-3-ene

IV



2-methylbut-2-ene

A I and IV

B II and III

C I, II and IV

D I, II, III and IV

36 In an experiment 50 cm^3 1.0 mol $dm^{-3}$of dilute nitric acid solution is mixed with 50 cm^3 of 1.0 mol dm^{-3} sodium hydroxide solution in a polystyrene cup. The temperature of the mixture increased by 14^0C. What is the heat released in the experiment?
[Specific heat capacity of the solution is 4.2 $Jg^{-1o}C^{-1}$]

Dalam satu eksperimen 50 cm^3*larutan asid nitrik* 1.0 mol dm^{-3} *dicampur dengan* 50 cm^3 *larutan natrium hidroksida* 1.0 mol dm^{-3} *di dalam cawan polistirena. Suhu campuran itu bertambah sebanyak* 14^oC. *Berapakah haba yang dibebaskan dalam eksperimen itu?*
[*Muatan haba tentu larutan ialah* 4.2 $Jg^{-1o}C^{-1}$]

A 1470 J
B 2940 J
C 4410 J
D 5880 J

37 Which of the following fertilizers is the most suitable to increase soil fertility?
[Relative molecular mass: $NaNO_3$ = 85, NH_4NO_3= 80, $(NH_4)_2SO_4$ = 132, $(NH_4)_3PO_4$ = 149, Relative atomic mass: N=14]

Antara baja berikut yang manakah paling sesuai untuk meningkatkan kesuburan tanah?
[*Jisim molekul relatif*: $NaNO_3$ = 85, NH_4NO_3= 80, $(NH_4)_2SO_4$ = 132, $(NH_4)_3PO_4$ = 149, *Jisim atom relatif*: N=14]

A $NaNO_3$
B NH_4NO_3
C $(NH_4)_2SO_4$
D $(NH_4)_3PO_4$

38 Which of the following equations represent a redox reaction?
Antara persamaan beriku, yang manakah mewakili tindak balas redok?

I $CuO + H_2SO_4 \rightarrow CuSO_4 + H_2O$
II $2HCl + Zn \rightarrow ZnCl_2 + H_2$
III $Ag^+ + Cl^- \rightarrow AgCl$
IV $Cl_2 + 2I^- \rightarrow 2Cl^- + I_2$

A I and II

B II and IV

C I and III

D III and IV

39 The following equation shows the decomposition of carbonate M when heated strongly.
Persamaan berikut menunjukkan penguraian garam karbonat M apabila dipanaskan dengan kuat.

$$MCO_3 \rightarrow MO + CO_2$$

What is the mass of MCO_3 needed to produce 8.0 g of MO?
Apakah jisim MCO_3 *yang diperlukan untuk menghasilkan* 8.0 g MO?

[Relative atomic mass: C = 12, O = 16, M = 64]
[*Jisim atom relatif* : C = 12, O = 16, M = 64]

A 3.7 g

B 6.2 g

C 8.0 g

D 12.4 g

40 A patient is experiencing depression and has difficulty in sleeping. Which of the following medicine is suitable for treating this patient?
Seorang pesakit menghadapi kemurungan dan kesusahan untuk tidur. Antara ubat berikut, yang manakah sesuai bagi merawat pesakit tersebut?

A Codeine
Kodeina

B Barbiturate
Barbiturat

C Paracetamol
Parasetamol

D Streptomysin
Streptomisin

41 The nucleon number of X is 40 and X^{2+} ion has 18 electrons.
What is the number of neutrons of X^{2+} ion?

Nombor nukleon X ialah 40 dan ion X^{2+} mempunyai 18 elektron.
Berapakah bilangan neutron bagi ion X^{2+} ?

A 18

B 20

C 22

D 40

42 The following chemical equation shows the reaction between sodium and oxygen.
Persamaan kimia berikut menunjukkan tindak balas antara natrium dengan oksigen.

$$\mathbf{n}Na(s) + O_2(g) \rightarrow \mathbf{m}\boxed{\quad}$$

What are the values of n, m and the formula in the box?
Apakah nilai bagi n, m dan formula dalam kotak?

	n	m	Formula
A	4	2	Na_2O
B	2	2	Na_2O
C	2	2	NaO_2
D	2	4	NaO

43 Diagram 14 shows the ionic formulae of elements A and B.
Rajah 14 *menunjukkan formula ion bagi unsur* A *dan* B.

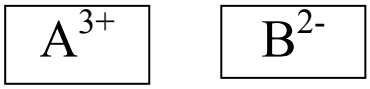


Diagram 14
Rajah 14

Which of the following ionic equations represents the reaction between the ions?
Antara persamaan ion berikut yang manakah mewakili tindak balas antara ion-ion tersebut?

A $A^{3+} + B^{2-} \rightarrow A_2B_3$

B $2A + 3B \rightarrow A_2B_3$

C $2A^{3+} + 3B^{2-} \rightarrow A_2B_3$

D $3A^{3+} + 2B^{2-} \rightarrow A_2B_3$

44 The following equation shows the reaction between sulphuric acid and potassium hydroxide.
Persamaan berikut menunjukkan tindak balas antara asid sulfurik dan kalium hidroksida.

$$H_2SO_4 + 2KOH \rightarrow K_2SO_4 + 2\ H_2O$$

What is the volume of 0.5 mol dm^{-3} potassium hydroxide solution which can neutralize 50.0 cm^3 of 0.5 mol dm^{-3} sulphuric acid?
Berapakah isipadu larutan kalium hidroksida 0.5 mol dm^{-3} *yang boleh meneutralkan 50.0* cm^3 *asid sulfurik* 0.5 mol dm^{-3}?

A 25.0 cm^3
B 50.0 cm^3
C 75.0 cm^3
D 100.0 cm^3

45 Table 4 shows the information of three chemical cells.
Jadual 4 *menunjukkan maklumat tentang tiga sel kimia*.

Chemical cell *Sel kimia*	**Pair of metal electrodes** *Pasangan elektrod logam*	**Voltage /V** *Voltan* /V	**Negative terminal** *Terminal negatif*
I	Q, P	0.7	Q
II	R, Q	2.7	Q
III	R, S	1.1	S

Table 4
Jadual 4

Which of the following is the arrangement in ascending order of these metals in the electrochemical series?
Antara yang berikut, yang manakah susunan secara menaik bagi logam-logam ini dalam siri elektrokimia?

A R, P, S, Q
B Q, P, S, R
C S, R, P, Q
D R, S, P, Q

46 The following chemical equation shows the reaction between potassium iodide solution and lead(II) nitrate solution:
Persamaan kimia berikut menunjukkan tindak balas antara larutan kalium iodida dan larutan plumbum(II) *nitrat*:

$$Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3$$

Calculate the maximum mass of precipitate formed when excess potassium iodide solution is added to 50 cm^3 of 0.2 mol dm^{-3} lead(II) nitrate solution.
[Relative atomic mass: Pb = 207, I = 127, K = 39, N =14, O =16]

Hitungkan jisim maksimum mendakan yang terbentuk apabila larutan kalium iodida berlebihan ditambah ke dalam 50 cm^3 *larutan plumbum(*II*) nitrat* 0.2 mol dm^{-3}.
[*Jisim atom relatif*: Pb = 207, I = 127, K = 39, N =14, O =16]

A 1.01 g
B 2.02 g
C 4.61 g
D 9.22 g

47 Excess calcium carbonate powder reacts with 50 cm^3 of 0.1 mol dm^{-3} hydrochloric acid to produce carbon dioxide gas.
Which of the following acids will produce a highest rate of reaction?

Kalsium karbonat berlebihan bertindak balas dengan 50 *cm^3 asid hidroklorik* 0.1 *mol dm^{-3} bagi menghasilkan gas karbon dioksida.*
Antara asid berikut yang manakah akan menghasilkan kadar tindak balas yang paling tinggi?

A 50 cm^3 of 0.2 mol dm^{-3} sulphuric acid
50 cm^3 *sulfurik asid* 0.2 mol dm^{-3}

B 50 cm^3 of 0.2 mol dm^{-3} ethanoic acid
50 cm^3 *asid etanoik asid* 0.2 mol dm^{-3}

C 50 cm^3 of 0.2 mol dm^{-3} carbonic acid
50 cm^3 *asid karbonik* 0.2 mol dm^{-3}

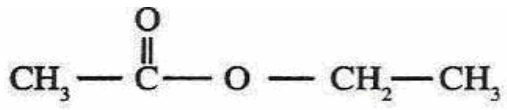
D 50 cm^3 of 0.2 mol dm^{-3} nitric acid
50 cm^3 *asid nitrik* 0.2 mol dm^{-3}

48

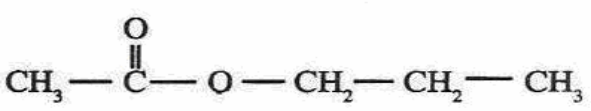
Ethanoic acid + propanol	→	Compound X + Water
Asid etanoik + propanol	→	*Sebatian* X + *Air*

What is the structural formula of compound X?
Apakah formula struktur bagi sebatian X?

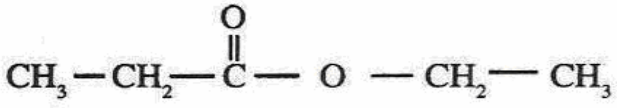
A



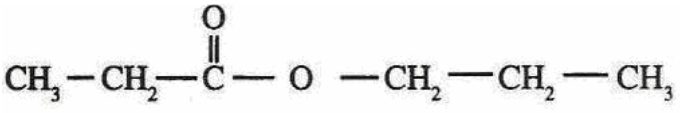
B



C



D



49 Which of the following reactions needs a catalyst for the production of sulphuric acid by the Contact Process?
Antara tindak balas berikut yang manakah memerlukan mangkin untuk penghasilan asid sulfurik melalui Proses Sentuh?

A $S + O_2 \rightarrow SO_2$

B $2SO_2 + O_2 \rightarrow 2SO_3$

C $SO_3 + H_2S_2O_7 \rightarrow H_2S_2O_7$

D $H_2S_2O_7 + H_2O \rightarrow 2H_2SO_4$

50 Diagram 15 shows a method to prevent the corrosion of underground steel tank by sacrificial protection.
Rajah 15 *menunjukkan satu cara mencegah kakisan tangki keluli di bawah tanah secara perlindungan korban.*

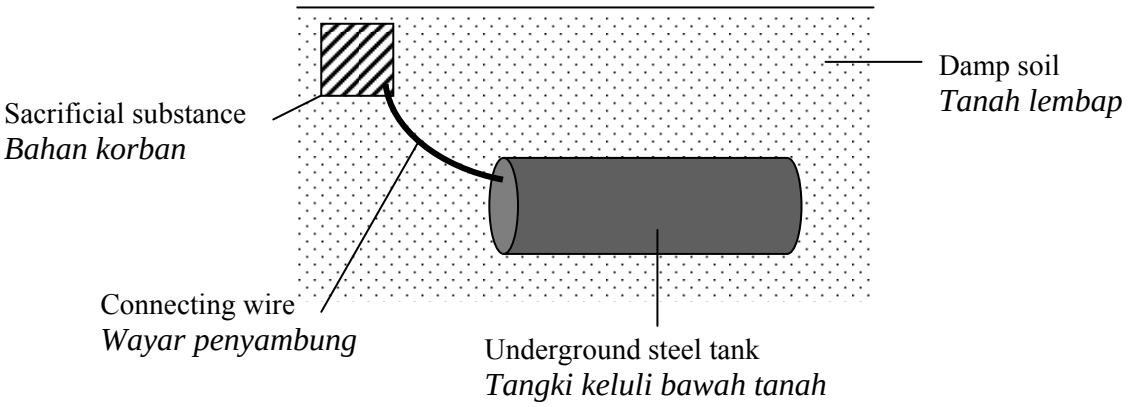


Diagram 15
Rajah 15

Which of the following elements is the most suitable as the sacrificial substance?
Antara unsur berikut yang manakah paling sesuai sebagai bahan korban?

A Carbon
Karbon

B Copper
Kuprum

C Iron
Ferum

D Magnesium
Magnesium

END OF QUESTION PAPER
KERTAS SOALAN TAMAT