

- 1 Which of the following substance is made up of ion?
Antara bahan berikut yang manakah terdiri daripada ion?
- A Zinc
Zink
 - B Ammonium chloride
Ammonium klorida
 - C Naphthalene
Naftalena
 - D Oxygen gas
Gas oksigen
- 2 What is the meaning of Avogadro constant?
Apakah yang dimaksudkan dengan pemalar Avogadro?
- A Number of particles in one mole a substance
Bilangan zarah dalam satu mol bahan
 - B Pressure of one mole of a substance
Tekanan bagi satu mol bahan
 - C Volume occupied by one mole of gas
Isipadu yang dipenuhi oleh satu mol gas
 - D Mass of one mole of a substance
Jisim bagi satu mol bahan
- 3 Metal Y is soft and shiny. It reacts with water to produce a solution which turns red litmus paper to blue. What is metal Y?
Logam Y bersifat lembut dan berkilat. Ia bertindak balas dengan air untuk menghasilkan satu larutan yang menukarkan kertas litmus merah kepada biru. Apakah logam Y?
- A Iron
Ferum
 - B Copper
Kuprum
 - C Potassium
Kalium
 - D Tin
Stanium

- 4 Which of the following is an ionic compound?
Antara berikut, yang manakah adalah sebatian ion?
- A H_2O
 - B SO_3
 - C NH_3
 - D MgBr_2
- 5 Which of the following is correct about an electrolyte?
Antara berikut, manakah betul tentang elektrolit?
- A Has free moving ions in aqueous state
Mempunyai ion-ion yang bergerak bebas dalam keadaan akues
 - B Exists as liquid at room temperature
Wujud sebagai cecair pada suhu bilik
 - C Dissolves in water
Larut dalam air
 - D Can conducts electricity in solid state
Boleh mengkonduksikan elektrik dalam keadaan pepejal
- 6 Which of the following particles in ammonia solution shows alkaline properties?
Antara zarah-zarah dalam larutan ammonia, yang manakah menunjukkan sifat alkali?
- A H^+
 - B OH^-
 - C NH_4^+
 - D NH_3

- 7 Which of the following salts can be prepared by precipitation reaction?
Antara berikut garam manakah boleh disediakan melalui tindak balas pemendakan?

- I Zinc nitrate
Zink nitrat
- II Barium sulphate
Barium sulfat
- III Silver chloride
Argentum klorida
- IV Potassium carbonate
Kalium karbonat

- A I and III only
I dan III sahaja
- B II and III only
II dan III sahaja
- C III and IV only
III dan IV sahaja
- D I and II only
I dan II sahaja

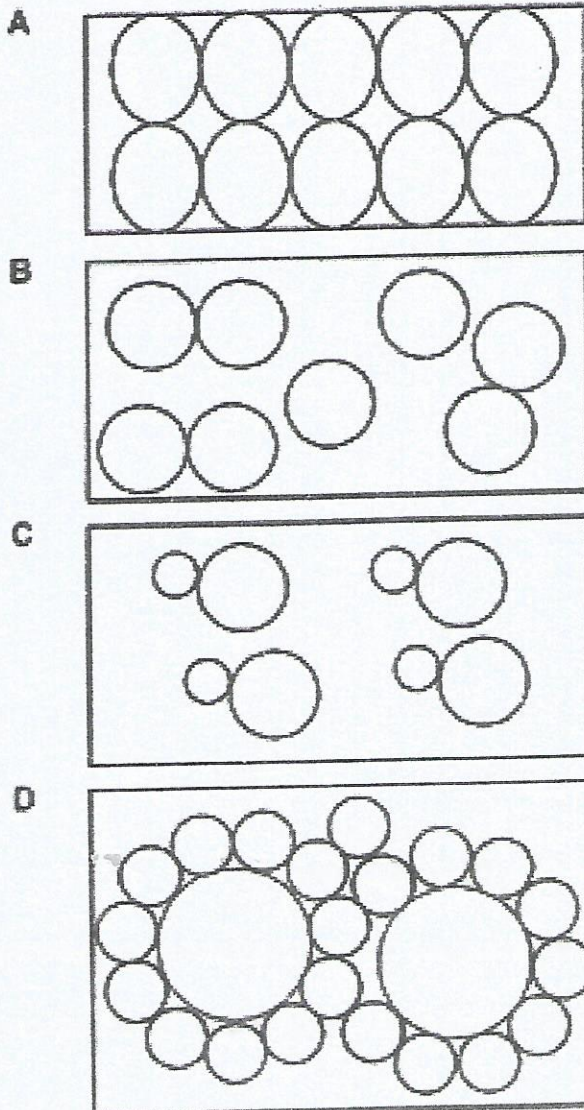


Based on the chemical equation above, what changes can be observed to determine the rate of reaction?

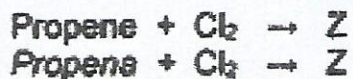
Berdasarkan persamaan kimia diatas, apakah perubahan yang dapat diperhatikan untuk menentukan kadar tindak balas?

- A Volume of gas liberated increased
Pertambahan isipadu gas yang terbebas
- B Mass of reactant increased
Pertambahan jisim bahan tindak balas
- C The volume of reactant solution is decrease
Pengurangan isipadu larutan bahan tindak balas
- D Precipitation produce is reduce
Mendakan yang terbentuk berkurang

- 9 Which diagram shows the arrangement of particles in an alloy?
Rajah yang manakah menunjukkan susunan zarah dalam aloi?

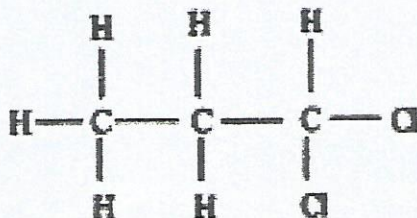


- 10 The following equation represents the reaction between propene and chlorine.
Persamaan berikut mewakili tindak balas antara propena dan klorin.

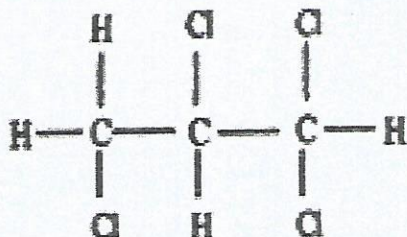


Which of the following is the structural formula for Z?
Antara berikut yang manakah adalah formula struktur bagi Z?

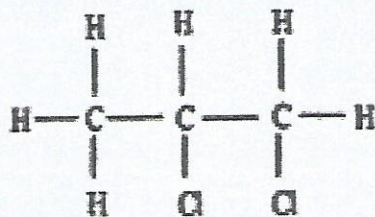
A



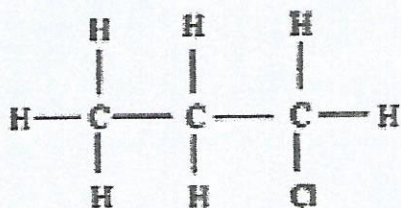
B



C



D



- 11 Which of the following occurred during oxidation?
Antara berikut, yang manakah berlaku semasa proses pengoksidaan?
- A Loss of oxygen
Kehilangan oksigen
 - B Gain of hydrogen
Terima hidrogen
 - C Loss of electron
Kehilangan elektron
 - D Decrease in oxidation number
Pengurangan nombor pengoksidaan
- 12 When zinc is dissolved in hydrochloric acid, the temperature is increased. This type of energy change is described as
Apabila zink dilarutkan dalam asid hidroklorik, suhu didapati meningkat. Jenis perubahan haba ini digambarkan sebagai
- A Exothermic
Eksotermik
 - B Isothermic
Isotermik
 - C Endothermic
Endotermik
 - D Polyisothermic
Poliisotermik
- 13 Che Nom wants to bake a cheese tart which is sweet but has low calories and attractive in colour.
Which substance should be added into the cheese tart?
Che Nom ingin membakar tart keju yang manis tetapi mempunyai kurang kalori dan menarik warnanya.
Bahan yang manakah perlu ditambah ke dalam tart keju itu?
- A Monosodium glutamate and benzoic acid
Mononatrium glutamat dan asid benzoik
 - B Monosodium glutamate and tartrazine
Mononatrium glutamat dan tartrazina
 - C Aspartame and benzoic acid
Aspartam dan asid benzoik
 - D Aspartame and tartrazine
Aspartam dan tartrazina

- 14 Diagram 1 shows a model of an atom.
Rajah 1 menunjukkan satu model atom

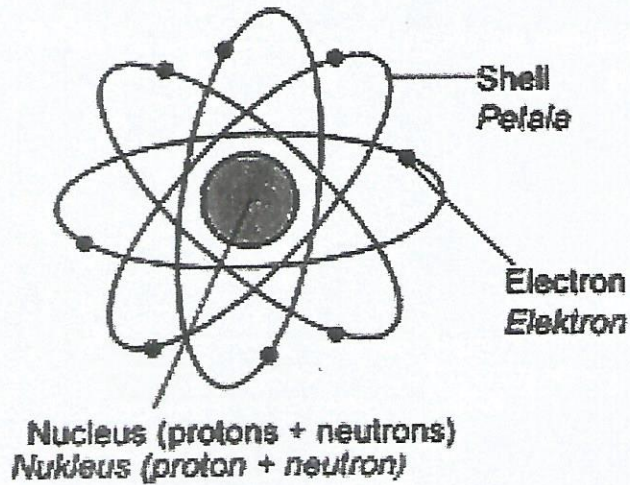


Diagram / Rajah 1

Who introduced this model?
Siapakah yang memperkenalkan model ini?

- A J. J. Thomson
- B Ernest Rutherford
- C Niels Bohr
- D James Chadwick

- 15 Diagram 2 shows the apparatus set-up to determine the empirical formula of copper(II) oxide.

Rajah 2 menunjukkan susunan radas untuk menentukan formula empirik bagi kuprum(II) oksida.

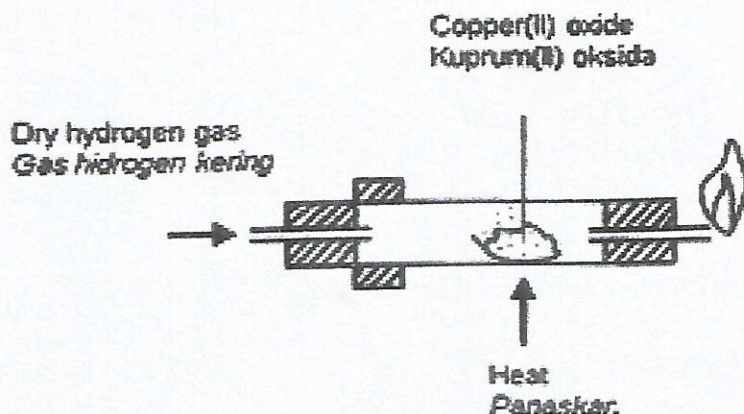


Diagram / Rajah 2

The dry hydrogen gas must be flowed through the apparatus for several minutes before heating the copper(II) oxide. What is the reason for this action to be taken?

Gas hidrogen kering mesti dialirkan melalui radas untuk beberapa minit sebelum pemanasan kuprum(II) oksida. Apakah sebab tindakan ini diambil?

- A To ensure all the copper(II) oxide has changed into copper.
Untuk memastikan semua kuprum(II) oksida bertukar kepada kuprum.
- B To prevent copper from reacting with air to form copper(II) oxide.
Untuk mengelakkan kuprum daripada bertindak balas dengan udara bagi membentuk kuprum(II) oksida.
- C To ensure all air has been removed so that explosion can be prevented.
Untuk memastikan semua udara dikeluarkan supaya letupan dapat dielakkan
- D To prevent the water from flowing toward the hot porcelain dish and cracks the combustion tube.
Untuk mengelakkan air daripada mengalir kearah piring porselin yang panas dan meretakkan tiub pembakaran.

- 16 Table 1 shows an atom E with its proton number and nucleon number.
 Jadual 1 menunjukkan nombor proton dan nombor nukleon bagi atom E.

Proton number Nombor proton	5
Nucleon number Nombor nukleon	11

Table/Jadual 1

Which group and period is E located in the Periodic Table?
 Kumpulan dan kala manakah E terletak dalam Jadual Berkala?

	Group Kumpulan	Period Kala
A	2	3
B	3	2
C	2	13
D	13	2

- 17 Table 2 shows the electron arrangement of atom S and atom T.
 Jadual 2 menunjukkan susunan elektron atom S dan atom T

Element Unsur	Electron arrangement Susunan elektron
S	2.4
T	2.8.7

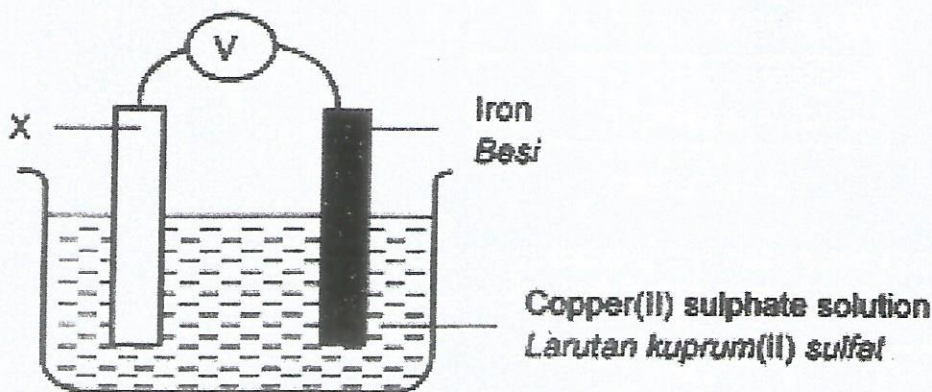
Table/Jadual 2

Which of the formula of the compound and the bond formed between element S and T?

Apakah formula dan jenis ikatan bagi sebatian yang terbentuk antara S dan T?

	Formula of compound Formula sebatian	Bond Ikatan
A	ST ₄	Covalent
B	S ₄ T	Ionic
C	ST ₄	Ionic
D	S ₄ T	Covalent

- 18 Diagram 3 shows a simple voltaic cell.
Rajah 3 menunjukkan suatu sel voltan ringkas.



Diagram/ Rajah 3

X electrode is a negative terminal. Which metal is suitable to be used as electrode X?
Elektrod X adalah terminal negative. Logam manakah yang sesuai digunakan sebagai elektrod X?

- A Magnesium
Magnesium
- B Lead
Plumbum
- C Copper
Kuprum
- D Silver
Argentum
- 19 Which pair of acids is classified correctly?
Pasangan asid yang manakah dikelaskan dengan betul?

	Monoprotic acid Asid monobes	Diprotic acid Asid dwibes
A	Sulphuric acid Asid sulfurik	Carbonic acid Asid karbonik
B	Ethanoic acid Asid etanoik	Sulphuric acid Asid sulfurik
C	Carbonic acid Asid karbonik	Hydrochloric acid Asid hidroklorik
D	Hydrochloric acid Asid hidroklorik	Ethanoic acid Asid etanoik

- 20 Which of the following ions form white precipitate that dissolves in excess ammonia solution?
Diantara ion-ion berikut yang manakah menghasilkan mendakan putih yang larut dalam larutan ammonia berlebihan?
- A Mg^{2+}
 - B Al^{3+}
 - C Zn^{2+}
 - D Pb^{2+}
- 21 What is the property of ceramics that make them suitable to be insulating layers in the lining of furnaces?
Apakah sifat seramik yang membuatnya sesuai untuk menjadi lapisan penebat dalam lapisan relau?
- A Chemically inert
Lengai terhadap bahan kimia
 - B Heat insulator
Penebat haba
 - C Hard and strong
Keras dan kuat
 - D Electrical insulator
Penebat elektrik
- 22 Diagram 4 shows an energy profile diagram for a reaction.
Rajah 4 menunjukkan gambar rajah aras tenaga bagi satu tindak balas.
- Which of the following correct label of activation energy?
Antara berikut yang manakah dilabelkan dengan betul bagi tenaga pengaktifan?

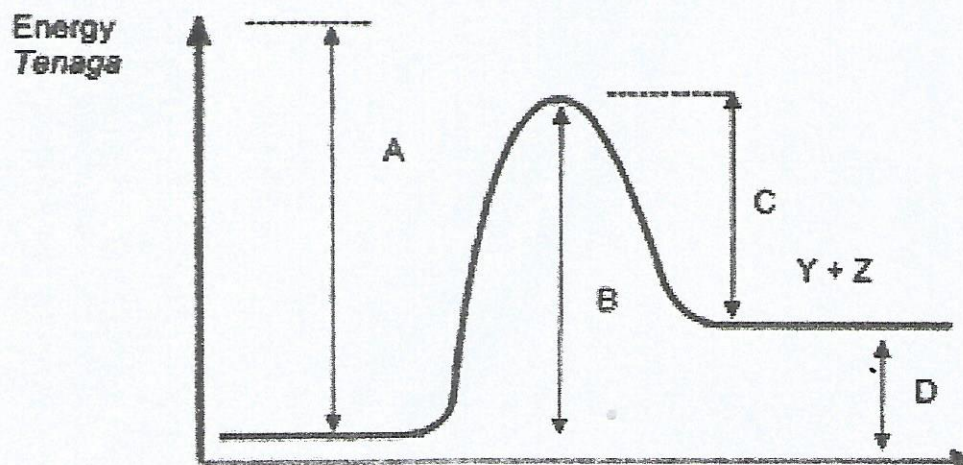
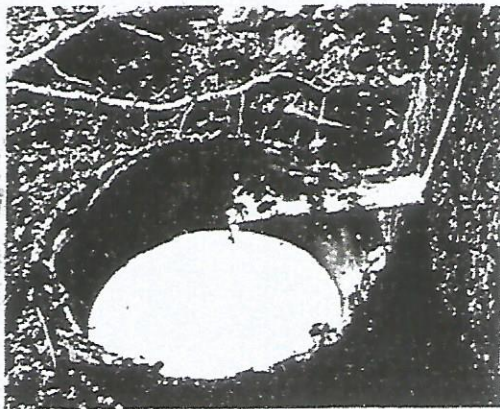
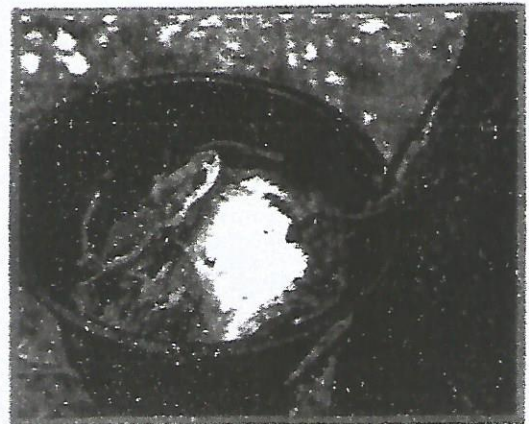


Diagram / Rajah 4

- 23 The diagram 5 below shows the natural change that occurs on latex. Choose the substance which is suitable to be added into latex to speed up the above change?
Rajah 5 di bawah menunjukkan perubahan yang berlaku pada lateks secara semulajadi. Pilih bahan manakah yang sesuai dicampurkan kepada lateks untuk mempercepatkan perubahan di bawah?



After
1 day
*Selepas
1 hari*



Diagram/ *Rajah* 5

- A Ethanol
Etanol
- B Formic acid
Asid formik
- C Potassium nitrate solution
Larutan kalium nitrat
- D Sodium hydroxide solution
Larutan natrium hidroksida

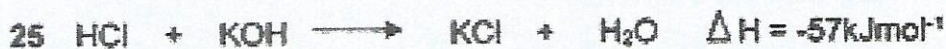
- 24 The following chemical equation shows the reaction between carbon and copper(II) oxide.
Persamaan kimia berikut menunjukkan tindak balas antara karbon dengan kuprum(II) oksida.



Which of the following statement is true about this reaction.

Antara pernyataan berikut yang manakah benar berkaitan tindakbalas tersebut.

- I Brown solid produced
Pepejal perang terhasil
 - II Carbon acts as an oxidising agent
Karbon bertindak sebagai agen pengoksidaan
 - III The oxidation number of copper increase from 0 to +2
Nombor pengoksidaan kuprum bertambah dari 0 kepada +2
 - IV The oxidation number of copper decreases from +2 to 0
Nombor pengoksidaan kuprum berkurang dari +2 kepada 0
- A I and II
I dan II
 - B I and IV
I dan IV
 - C III and IV
III dan IV
 - D I, II and IV
I, II dan IV

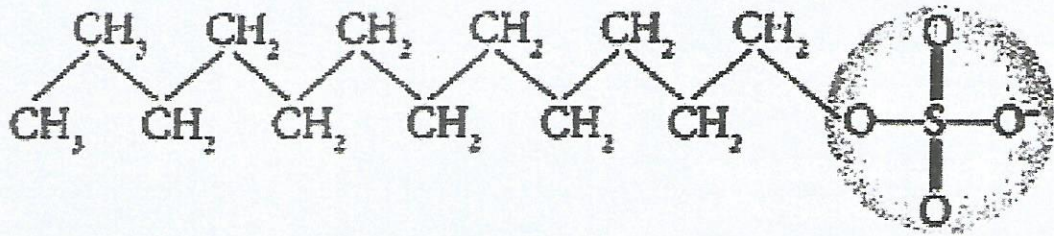


Based on thermochemical equation above, calculate the heat change when 50 cm³ of 0.1 mol dm⁻³ HCl react with 50 cm³ of 0.1 mol dm⁻³ KOH.

Berdasarkan persamaan termokimia di atas, hitungkan perubahan haba apabila 50 cm³, 0.1 mol dm⁻³ HCl bertindakbalas dengan 50 cm³, 0.1 mol dm⁻³ KOH.

- A 57 J
- B 285 J
- C 357 J
- D 385 J

- 26 Diagram 6 shows the structural formula of X.
Rajah 6 menunjukkan formula struktur X.



Diagram/ Rajah 6

What is X?
Apakah X?

- A Soap
Sabun
 - B Carboxylic acid
Asid karbosilik
 - C Sulphuric acid
Asid sulfurik
 - D Detergent
Detergen
- 27 Which substance is an element?
Bahan manakah yang merupakan suatu unsur?
- A Naphthalene
Naftalena
 - B Steam
Stim
 - C Air
Udara
 - D Neon
Neon

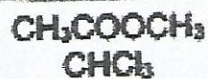
- 28 Which of the following pairs of compounds are in the same homologous series?
 Antara pasangan sebatian berikut, yang manakah berada dalam siri homolog yang sama?

	Compound 1 Sebatian 1	Compound 2 Sebatian 2
A	C_2H_4	C_3H_6
B	C_2H_6	C_3H_8
C	C_2H_5OH	CH_3CO_2H
D	C_2H_5OH	C_2H_5COOH

- 29 Metal Y react with chlorine to form a green solid, YCl_2 or brown solid, YCl_3 .
 Based on the product of reaction above, where is the position of metal Y in the periodic table element.
 Logam Y bertindak balas dengan klorin menghasilkan pepejal hijau YCl_2 atau pepejal perang YCl_3 .
 Berdasarkan hasil tindak balas di atas, di manakah kedudukan logam Y di dalam jadual berkala unsur?

- A Alkali metal group
Kumpulan logam alkali
- B Halogen group
Kumpulan halogen
- C Transition element group
Kumpulan logam peralihan
- D Noble gases group
Kumpulan gas adi

- 30 Table 3 shows the chemical formula of two compound.
Jadual 3 menunjukkan formula kimia bagi dua sebatian.



Table/Jadual 3

Which property of both compounds is similar?
Sifat manakah yang sama bagi kedua-dua sebatian?

- A Melting point
Takat lebur
- B Solubility
Keterlarutan
- C Density
Ketumpatan
- D Molar mass
Jisim molar

- 31 Diagram 7 shows the set up of apparatus for an experiment involving a chemical cell.
Rajah 7 di bawah menunjukkan susunan radas bagi satu eksperimen yang melibatkan sel kimia.

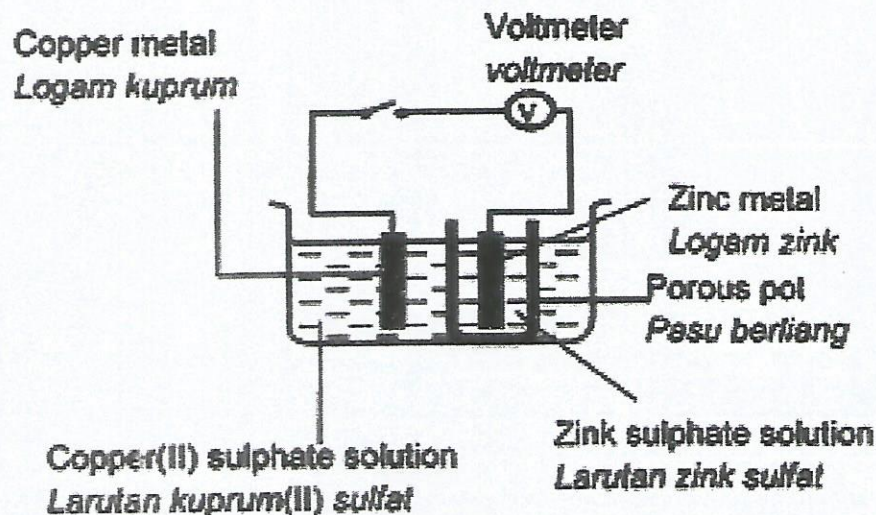


Diagram / Rajah 7

Which of the following statements are true about the above experiment?
Pernyataan manakah benar tentang eksperimen di atas?

- I Copper metal becomes thinner
Logam kuprum semakin menipis
 - II Zinc metal becomes thinner
Logam zink semakin menipis
 - III Blue color of copper(II) sulphate solution is fading
Warna biru larutan kuprum(II) sulfat semakin pudar
 - IV Brown deposit formed at zinc electrode
Enapan perang terbentuk di elektrod zink
- 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

32 Diagram 8 shows the arrangement of particles in three state of matter at room temperature.

Rajah 8 menunjukkan susunan zarah dalam tiga keadaan jirim pada suhu bilik.

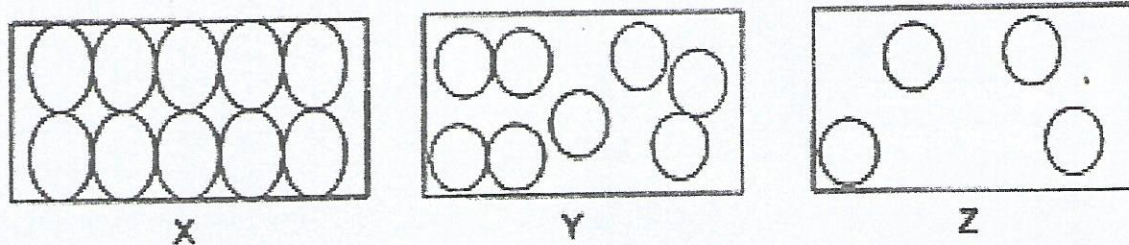
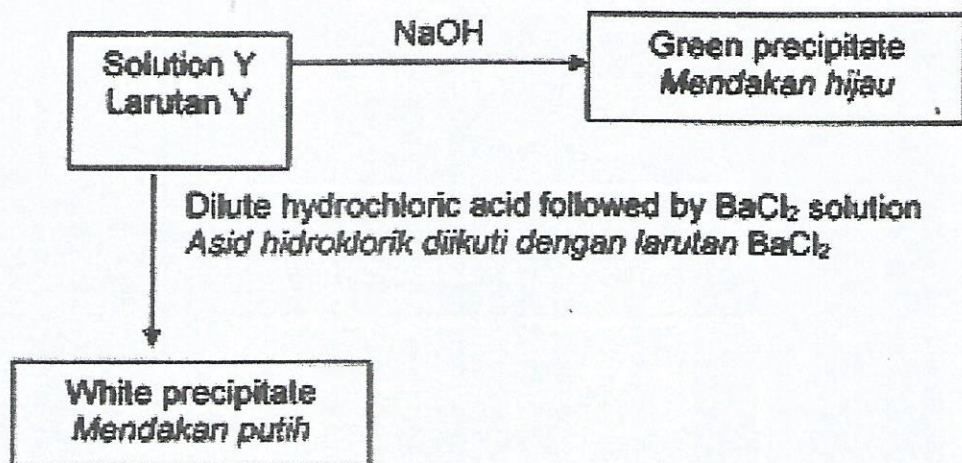


Diagram / Rajah 8

What are substances X, Y and Z at room temperature?
Apakah bahan X, Y dan Z pada suhu bilik?

	X	Y	Z
A	Bromine Bromin	Naphthalene Naftalena	Nitrogen Nitrogen
B	Naphthalene Naftalena	Bromine Bromin	Nitrogen Nitrogen
C	Nitrogen Nitrogen	Bromine Bromin	Naphthalene Naftalena
D	Naphthalene Naftalena	Nitrogen Nitrogen	Bromine Bromin

- 33 Diagram 9 shows a series of tests carried out on solution Y.
Rajah 9 menunjukkan satu siri ujian telah dijalankan ke atas larutan Y.

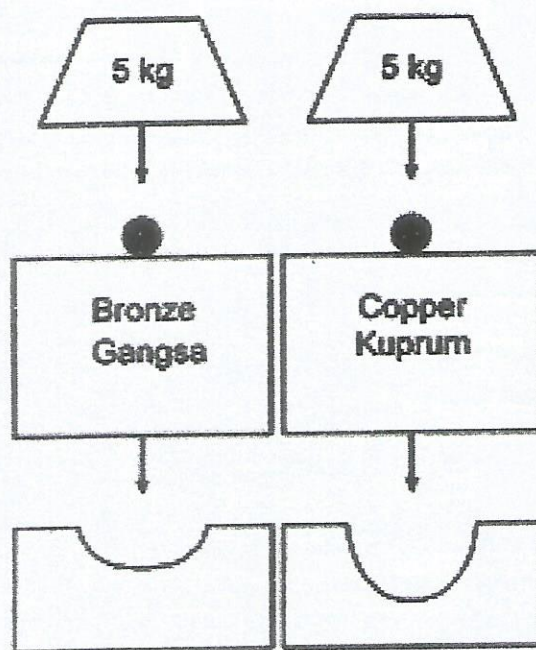


Diagram/ Rajah 9

Which of the following is most likely to be solution Y.
Antara berikut manakah kemungkinan larutan Y.

- A Iron(II) sulphate
Ferum(II) sulfat
- B Lead(II) sulphate
Plumbum(II) sulfat
- C Iron(II) chloride
Ferum(II) klorida
- D Copper(II) carbonate
Kuprum(II) karbonat

- 34 Diagram 10 below shows the effect of a weight that is dropped onto steel ball bearing placed on bronze and copper blocks.
 Rajah 10 di bawah menunjukkan kesan satu pemberat dijatuhkan ke atas bebola keluli yang terletak di atas bongkah gangsa dan kuprum.



After the impact After the impact
 Selepas hentaman Selepas hentaman

Diagram/ Rajah 10

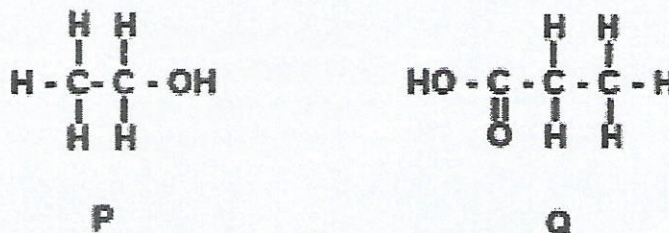
What is the characteristic shown by the bronze block?
 Apakah sifat yang ditunjukkan oleh bongkah gangsa?

- A Shiny
Berkilat
- B Light
Ringan
- C Strong and hard
Kuat dan keras
- D Able to withstand corrosion
Boleh menahan kakisan

35 0.2 mol of magnesium tape reacts with excess dilute nitric acid. After 30 seconds 0.05 mol of magnesium remains as residue. What is the average rate of reaction?
 0.2 mol pita magnesium bertindak balas dengan asid nitrik cair berlebihan. Setelah 30 saat, didapati 0.05 mol magnesium tertinggal sebagai baki. Berapakah kadar tindak balas purata itu?

- A $1.7 \times 10^{-3} \text{ mol s}^{-1}$
 B $1.5 \times 10^{-3} \text{ mol s}^{-1}$
 C $2.3 \times 10^{-3} \text{ mol s}^{-1}$
 D $5.0 \times 10^{-3} \text{ mol s}^{-1}$

36 Diagram 11 below are the structural formulae which represent organic compounds P and Q.
 Rajah 11 di bawah menunjukkan formula struktur yang mewakili sebatian organik P dan Q.



Diagram/ Rajah 11

What is the name of the compound formed when compound P reacts with compound Q using concentrated sulphuric acid as a catalyst?

Apakah nama sebatian yang terhasil apabila sebatian P bertindak balas dengan sebatian Q dengan menggunakan asid sulfurik pekat sebagai mangkin?

- A Butyl ethanoate
 Butil etanoat
 B Ethyl butanoate
 Etil butanoat
 C Propyl ethanoate
 Propil etanoat
 D Ethyl propanoate
 Etil propanoat

37 Magnesium react with hydrochloric acid, state the process happen to magnesium and hydrogen ion?

Magnesium bertindak balas dengan asid hidroklorik, nyatakan proses yang berlaku kepada magnesium dan ion hidrogen?

	Magnesium <i>Magnesium</i>	Hydrogen ion <i>Ion hidrogen</i>
A	Oxidation <i>Pengoksidaan</i>	Reduction <i>Penurunan</i>
B	Reduction <i>Penurunan</i>	Oxidation <i>Pengoksidaan</i>
C	Oxidation <i>Pengoksidaan</i>	Oxidation <i>Pengoksidaan</i>
D	Reduction <i>Penurunan</i>	Reduction <i>Penurunan</i>

38 A student wants to study the heat of displacement by using lead metal. Which of the solutions are suitable to be use in this experiment?

Seorang pelajar ingin mengkaji haba penyesaran menggunakan logam plumbum. Yang manakah larutan yang sesuai digunakan dalam eksperimen ini?

- I Zinc nitrate
Zink nitrat
 - II Copper (II) nitrate
Kuprum(II) nitrat
 - III Silver nitrate
Argentum nitrat
 - IV Magnesium nitrate
Magnesium nitrat
- A I and III
I dan III
 - B I and IV
I dan IV
 - C II and III
II dan III
 - D II and IV
II dan IV

39 Diagram 12 shows a child having fever. Her mother takes him to a doctor. What medicine the doctor prescribed to the child?

Rajah 12 menunjukkan seorang kanak-kanak yang demam.

Ibunya membawa kanak-kanak itu berjumpa doktor. Apakah ubat yang doktor akan preskripsi kepada kanak-kanak itu?



Diagram/ Rajah 12

- A Aspirin
Aspirin
 - B Barbiturate
Barbiturat
 - C Penicillin
Penisilin
 - D Paracetamol
Parasetamol
- 40 Every morning, Muthu helped his father to collect latex from the rubber tree. He found that the latex coagulated after a few hours. How muthu can prevent the latex from coagulating?
Setiap pagi, Muthu menolong ayahnya mengumpul latek dari pokok getah. Dia mendapati latek mengumpal selepas beberapa jam. Bagaimanakah Muthu dapat mengelakan latek daripada mengumpal?
- A Add ammonia solution
Tambah larutan ammonia
 - B Add sodium chloride solution
Tambah larutan natrium klorida
 - C Add ethanoic acid
Tambah asid etanoik
 - D Add sulphur monochloride
Tambah sulfur monoklorida

- 41 1.2 g of element X reacted with 8 g of element Y to form a compound with the formula XY_2 . What is the relative atomic mass of element X ?
[Relative atomic mass of Y = 80]

1.2 g unsur X bertindak balas dengan 8 g unsur Y untuk membentuk sebatian yang mempunyai formula XY_2 . Berapakah jisim atom relatif bagi unsur X ?
[Jisim atom relatif Y = 80]

- A 9
B 12
C 24
D 40
- 42 Table 4 shows the number of neutron and nucleon number of atom X and atom Y.
Jadual 4 menunjukkan bilangan neutron dan nombor nukleon bagi atom X dan atom Y.

Atom	Number of neutron Bilangan neutron	Nucleon number Nombor nukleon
X	12	24
Y	8	16

Table/Jadual 4

Which of the following, the properties of compound produced when X react with Y.
Antara berikut, yang manakah ciri-ciri sebatian yang terbentuk apabila X bertindak balas dengan Y?

- A Can conduct electricity in all state
Boleh mengkonduksikan elektrik dalam semua keadaan
- B Soluble in water
Larut di dalam air
- C React with alkali
Bertindak balas dengan alkali
- D Produce more sootiness when burn in air
Menghasilkan lebih banyak jelaga apabila terbakar dalam udara

- 43 Diagram 13 show the electron arrangement of compound Q produced when atom P react with atom R.

Rajah 13 menunjukkan susunan elektron bagi sebatian Q yang terbentuk apabila atom P bertindak balas dengan atom R.

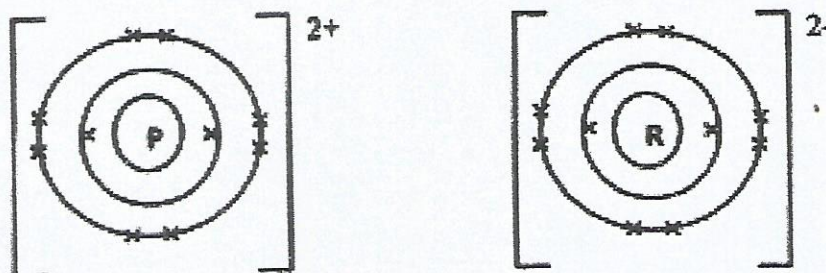


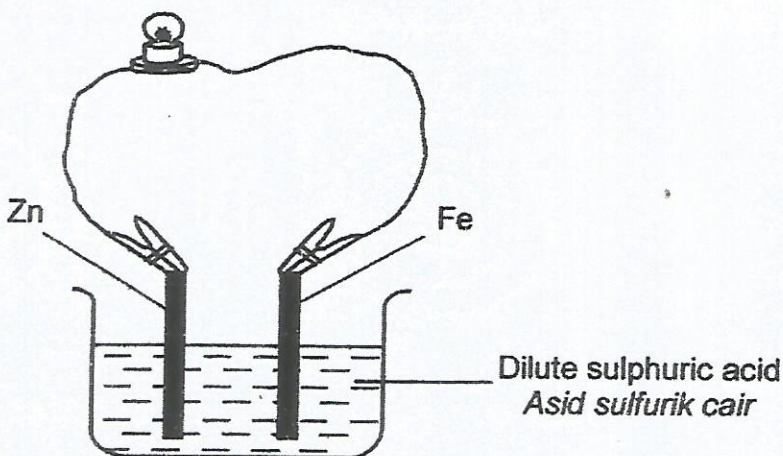
Diagram / Rajah 13

Which of the following are the position of element P and element R in the periodic table of elements?

Antara berikut, yang manakah kedudukan unsur P dan unsur R dalam jadual berkala unsur?

	P	R
A	Group/ Kumpulan 2 Period/ kala 2	Group / Kumpulan 2 Period/ kala 3
B	Group/ Kumpulan 18 Period/ kala 2	Group/ Kumpulan 18 Period/ kala 2
C	Group/ Kumpulan 2 Period/ kala 3	Group/ Kumpulan 16 Period/ kala 2
D	Group/ Kumpulan 16 Period/ kala 2	Group/ Kumpulan 16 Period/ kala 2

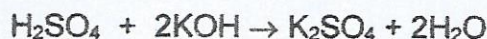
- 44 Diagram 14 show an apparatus set-up a chemical cell.
Rajah 14 menunjukkan susunan radas bagi sel kimia.



Diagram/ Rajah 14

What modification should be done to make the bulb shine most brightly?
Apakah pengubahsuaian yang perlu dilakukan supaya nyalaan mentol lebih terang?

- A Substitute dilute sulphuric acid with copper(II) sulphate solution
Menggantikan asid sulfurik cair dengan larutan kuprum(II) sulfat
- B Used a thick and wider metal plate
Menggunakan kepingan logam yang tebal dan lebar
- C Substitute ferum plate with aluminium plate
Menggantikan kepingan besi dengan kepingan aluminium
- D Substitute ferum plate with copper plate
Menggantikan kepingan besi dengan kepingan kuprum
- 45 The following equation shows the reaction between sulphuric acid and potassium hydroxide.
Persamaan berikut menunjukkan tindak balas antara asid sulfurik dan kalium hidroksida.



What is the volume of 0.5 mol dm^{-3} potassium hydroxide solution which can neutralise 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 100.0 cm^3
- D 400.0 cm^3

46 Which of the following pairs of substances is most suitable for the preparation of copper(II) sulphate?

Antara pasangan bahan berikut yang manakah paling sesuai digunakan untuk menyediakan kuprum(II) sulfat?

- A Dilute sulphuric acid, copper(II) carbonate
Asid sulfurik cair, kuprum(II) karbonat
- B Ammonium sulphate, copper(II) oxide
Ammonium sulfat, kuprum(II) oksida
- C Dilute sulphuric acid, copper powder
Asid sulfurik cair, serbuk kuprum
- D Aqueous sodium sulphate, aqueous copper(II) nitrate
Larutan natrium sulfat, larutan kuprum(II) nitrat

47 When 1.48 g of butanol, C_4H_9OH was burnt in excess oxygen, the heat liberated caused the temperature of 500 cm^3 of water to rise from 28 $^{\circ}C$ to 53.5 $^{\circ}C$. What is the heat of combustion of butanol?

[Relative molecular mass of butanol = 74, specific heat capacity = 4.2 $J g^{-1} ^{\circ}C^{-1}$]

Apabila 1.48 g butanol, C_4H_9OH terbakar dalam oksigen berlebihan, haba yang terhasil meningkatkan suhu 500 cm^3 air daripada 28 $^{\circ}C$ ke 53.5 $^{\circ}C$. Apakah haba pembakaran bagi butanol?

[Jisim molekul relatif bagi butanol = 74, haba muatan tentu = 4.2 $J g^{-1} ^{\circ}C^{-1}$]

- A 53.55 $kJ mol^{-1}$
- B 2677.50 $kJ mol^{-1}$
- C 2940.00 $kJ mol^{-1}$
- D 7925.40 $kJ mol^{-1}$

- 48 Table 5 show the volume of hydrogen gas collected in an experiment when zinc powder reacts with excess dilute hydrochloric acid.
 Jadual 5 menunjukkan isipadu gas hidrogen terkumpul dalam satu eksperimen apabila serbuk zink bertindak balas dengan asid hidroklorik cair.

Time (min) Masa (min)	0	1	2	3	4	5
Volume of hydrogen gas (cm ³) Isipadu gas hidrogen (cm ³)	0.0	30.0	32.0	32.5	33.0	33.0

Table/ Jadual 5

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

- A 0.11 cm³ s⁻¹
 B 0.14 cm³ s⁻¹
 C 0.66 cm³ s⁻¹
 D 0.75 cm³ s⁻¹

- 49 The decomposition of lead(II) nitrate produces lead(II) oxide, oxygen and a brown gas.
 Which of the following is the balanced chemical equation for the reaction?
 Penguraian plumbum(II) nitrat menghasilkan plumbum(II) oksida, oksigen dan gas berwarna perang. Antara berikut, yang manakah persamaan kimia seimbang bagi tindak balas berikut?

- A $\text{Pb}(\text{NO}_3)_2 \longrightarrow \text{PbO} + \text{NO}_2 + \text{O}_2$
 B $2\text{Pb}(\text{NO}_3)_2 + \text{O}_2 \longrightarrow 2\text{PbO} + 3\text{NO}_2 + \text{O}_2$
 C $2\text{Pb}(\text{NO}_3)_2 \longrightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$
 D $\text{Pb}(\text{NO}_3)_2 + \text{O}_2 \longrightarrow \text{PbO} + \text{NO}_2 + \frac{5}{2}\text{O}_2$

50 Diagram 15 shows the apparatus set-up used to investigate the reaction of iron(III) nitrate solution with potassium iodide solution.

Rajah 15 menunjukkan susunan radas yang digunakan untuk mengkaji tindak balas antara larutan ferum(III) nitrat dengan larutan kalium iodida.

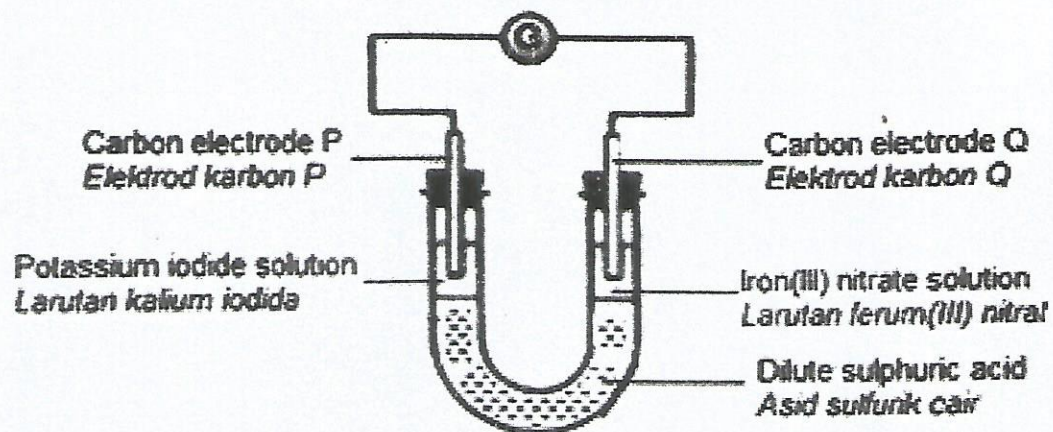


Diagram / Rajah 15

Which is the correct observation for the two solutions?

Pemerhatian yang manakah betul untuk kedua-dua larutan?

	Potassium iodide solution Larutan kalium iodida	Iron(III) nitrate solution Larutan Ferum(III) nitrat
A	Colourless to brown Tidak berwarna kepada perang	Brown to green Perang kepada hijau
B	Green to brown Hijau kepada perang	Purple to colourless Ungu kepada tidak berwarna
C	Colourless to brown Tidak berwarna kepada perang	Green to brown Hijau kepada perang
D	Green to brown Hijau kepada perang	Orange to green Jingga kepada hijau

END OF QUESTIONS
SOALAN TAMAT



JABATAN PELAJARAN TERENGGANU

Mark Sheet Paper 1 MPP 3

CHEMISTRY SPM 2020

1	✓ B
2	✓ A
3	✓ C
4	✓ D
5	✓ A
6	✓ B
7	✓ B
8	✓ A
9	✓ D
10	✓ C
11	✓ C
12	✓ A
13	✓ D
14	✓ D
15	✓ C
16	✓ D
17	✓ A
18	✓ A
19	✓ B
20	✓ C

21	✓ B
22	✓ B
23	✓ B
24	✓ B
25	✓ B
26	✓ D
27	✓ D
28	✓ A
29	✓ C
30	✓ B
31	✓ C
32	✓ B
33	✓ A
34	✓ C
35	✓ D
36	✓ D
37	✓ A
38	✓ C
39	✓ D
40	✓ A

41	✓ C
42	✓ B
43	✓ C
44	✓ D
45	✓ C
46	✓ A
47	✓ B
48	✓ B
49	✓ C
50	✓ A

25) $\Delta H = \frac{Q}{n} < 0.005 \text{ mol}$
57 = $\frac{Q}{0.005}$