



PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA  
SEKOLAH MENENGAH MALAYSIA (PKPSM) CAWANGAN MELAKA  
DENGAN KERJASAMA  
JABATAN PELAJARAN MELAKA

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PEPERIKSAAN PERCUBAAN  
SIJIL PELAJARAN MALAYSIA 2010

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CHEMISTRY

Kertas 1

Satu jam lima belas minit

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JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini mengandungi 50 soalan.*
2. *Jawab **semua** soalan.*
3. *Jawab dengan menghitamkan ruangan yang betul pada kertas jawapan.*
4. *Hitamkan **satu** ruangan sahaja bagi setiap soalan.*
5. *Rajah tidak dilukis mengikut skala **kecuali** dinyatakan*
6. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan*

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Kertas soalan ini mengandungi 25 halaman bercetak.

**INFORMATION FOR CANDIDATES**

1. *This question paper consists of 50 questions.*
2. *Answer all questions.*
3. *Answer each question by blackening the correct space on the answer sheet.*
4. *Blacken only one space for each question.*
5. *If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer.*
6. *The diagrams in the questions provided are not drawn to scale unless stated.*
7. *You may use a non-programmable scientific calculator.*

**MAKLUMAT UNTUK CALON**

1. *Kertas soalan ini mengandungi 50 soalan.*
2. *Jawab semua soalan*
3. *Jawab dengan menghitamkan ruangan yang betul pada kertas jawapan.*
4. *Hitamkan satu ruangan sahaja bagi setiap soalan.*
5. *Sekiranya anda hendak menukarkan jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.*
6. *Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.*
7. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan*

**Question 1 to Question 50 are followed by four options A, B, C or D.**  
*Choose the best option for each question and blackened the corresponding space on the objective answer sheet.*

*Bagi Soalan 1 hingga Soalan 50, tiap-tiap soalan diikuti oleh empat pilihan jawapan A, B, C dan D. Pilih satu jawapan yang terbaik bagi tiap-tiap soalan dan hitamkan ruangan yang sepadan pada kertas jawapan objektif anda*

- 1 Which of the following substances undergoes sublimation process when heated?  
*Manakah antara bahan berikut mengalami proses pemejalwapan bila dipanaskan?*
- A Sodium chloride  
*Natrium klorida*
- B Ammonium chloride  
*Ammonium klorida*
- C Sodium nitrate  
*Natrium nitrat*
- D Ethanol  
*Etanol*

- 2 Diagram 1 shows the set-up of the apparatus to study Process I.  
*Rajah 1 menunjukkan susunan radas bagi mengkaji Proses I*

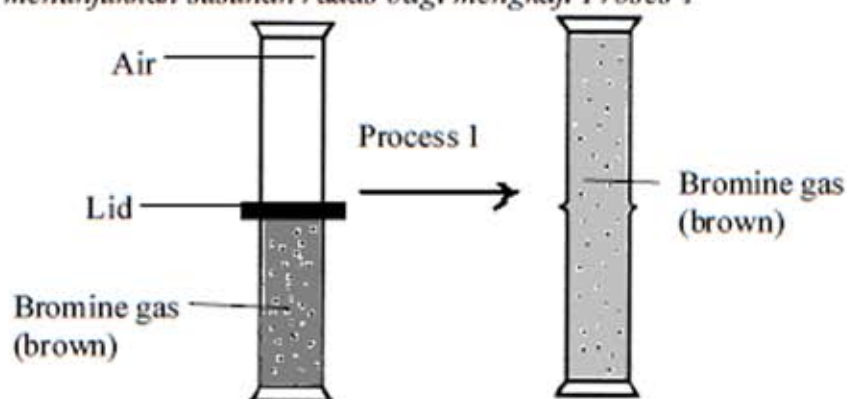


Diagram 1  
*Rajah 1*

What is Process I ?

*Apakah Proses I ?*

- A Condensation  
*Kondensasi*
- B Evaporation  
*Penyejatan*
- C Diffusion  
*Resapan*
- D Sublimation  
*Pemejalwapan*

- 3 Which of the following processes will decrease the kinetic energy of the particles of a substance?

*Proses yang manakah akan mengurangkan tenaga kinetik zarah-zarah bagi suatu bahan?*

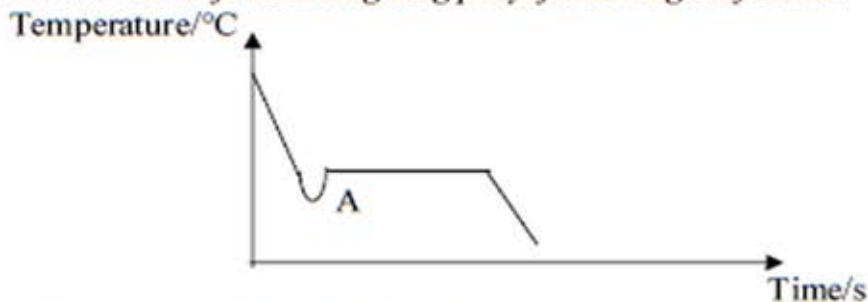
- A Melting  
*Peleburan*
- B Freezing  
*Pembekuan*
- C Boiling  
*Pendidihan*
- D Evaporation  
*Penyejatan*
- 4 Which of the following substances consists of atoms?

*Manakah antara bahan berikut mengandungi atom?*

- A Copper  
*Kuprum*
- B Nitrogen gas  
*Gas nitrogen*
- C Lead(II) iodide  
*Plumbum(II) iodida*
- D Naphthalene  
*Naftalena*

- 5 The graph below shows the cooling curve of naphthalene.

*Graf di bawah menunjukkan lengkung penyejukan bagi naftalena.*



Why is curve A obtained in the graph?

*Kenapakah lengkung A terjadi?*

- A Impure naphthalene is cooled.  
*Naftalena tak tulen disejukkan.*
- B Naphthalene evaporates during cooling process  
*Naftalena meruap semasa proses penyejukan*
- C Naphthalene is not stirred during cooling process  
*Naftalena tidak dikacau semasa proses penyejukan*
- D Naphthalene freezes after achieving its freezing point  
*Naftalena membeku setelah mencapai takat beku*

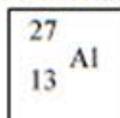
6

Electron moves around the nucleus in fixed orbital shells  
*Elektron bergerak mengelilingi nukleus dalam petala yang tetap*

Which of the following scientists proposed the atomic theory stated above?  
*Ahli sains yang manakah mencadangkan teori atom di atas?*

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

7 How many protons, neutrons and electrons does an atom of aluminium contain?  
*Berapakah bilangan proton, neutron dan elektron bagi atom aluminium?*



	Number of protons <i>Bilangan proton</i>	Number of neutrons <i>Bilangan neutron</i>	Number of electrons <i>Bilangan elektron</i>
A	13	14	13
B	13	27	13
C	14	13	14
D	27	14	13

8 The following statements are true about lead-acid accumulator except  
*Pernyataan-pernyataan berikut adalah benar mengenai akumulator asid-plumbum kecuali*

- A lead plate is the negative terminal  
*kepingan plumbum adalah terminal negatifnya*
- B carbon plate is the positive terminal  
*kepingan karbon adalah terminal positifnya*
- C the accumulator can be recharged  
*akumulator ini boleh dicas semula*
- D the electrolyte in this accumulator is sulphuric acid  
*elektrolitnya ialah asid sulfurik*

- 9 Table 1 shows the proton number and the nucleon number of atom X.  
*Jadual 1 menunjukkan nombor proton dan nombor nukleon bagi atom X*

Proton number <i>Nombor proton</i>	11
Nucleon number <i>Nombor nukleon</i>	23

Table 1  
*Jadual 1*

Which of the following is correct about the position of X in the Periodic Table of elements?  
*Yang manakah benar mengenai kedudukan X dalam Jadual Berkala Unsur?*

	Group <i>Kumpulan</i>	Period <i>Kala</i>
A	1	2
B	2	1
C	1	3
D	5	2

- 10 Table 2 shows the electron arrangement of atoms P, Q, R and T.  
*Jadual 2 menunjukkan susunan elektron atom-atom P, Q, R dan T*

Atom <i>Atom</i>	P	Q	R	T
Electron arrangement <i>Susunan elektron</i>	2.1	2.4	2.8.2	2.8.7

Table 2  
*Jadual 2*

Which of the following pairs of elements can combine to form a covalent compound?  
*Pasangan unsur yang manakah dapat berpadu membentuk sebatian kovalen ?*

- A Q and T  
 B P and R  
 C R and T  
 D Q and R

- 11 Which statement is true about the reaction of a sodium atom with oxygen atom to form sodium oxide ?

[Proton number: Na = 11, O = 8]

*Pernyataan yang manakah benar bagi tindak balas antara atom natrium dengan atom oksigen untuk membentuk natrium oksida ?*

[Nombor proton : Na = 11, O = 8]

- A One sodium atom donates one electron to one oxygen atom  
*Satu atom natrium menderma satu elektron kepada satu atom oksigen*
- B One sodium atom shares one electron with one oxygen atom  
*Satu atom natrium berkongsi satu elektron dengan satu atom oksigen*
- C Two sodium atom share one electron with one oxygen atom  
*Dua atom natrium berkongsi satu elektron dengan satu atom oksigen*
- D Two sodium atoms donate one electron each to one oxygen atom  
*Dua atom natrium menderma satu elektron setiap satu kepada satu atom oksigen*
- 12 Diagram 2 shows a simple cell made up of magnesium plate and copper plate as electrodes and copper(II) sulphate solution as the electrolyte.  
*Rajah 2 menunjukkan sebuah sel ringkas terdiri daripada kepingan magnesium dan kepingan kuprum sebagai elektrod dan larutan kuprum(II) sulfat sebagai elektrolit.*

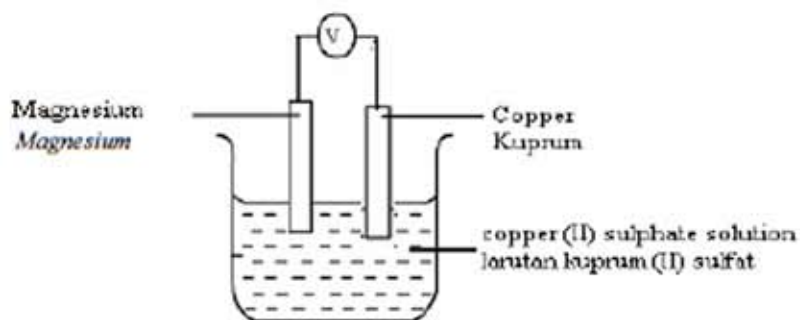


Diagram 2  
*Rajah 2*

Which of the following statements is true for the above reaction ?

*Yang manakah pernyataan berikut adalah benar bagi tindak balas di atas ?*

- A The blue colour of the copper(II) sulphate solution remains unchanged  
*Warna biru larutan kuprum(II) sulfat tidak berubah*
- B Copper electrode is the positive terminal  
*Elektrod kuprum adalah terminal positif*
- C Magnesium electrode becomes larger in size  
*Saiz elektrod magnesium bertambah besar*
- D Colourless gas bubbles are produced at the copper electrode  
*Gelembung gas tanpa warna terhasil di elektrod kuprum*

- 13 Diagram 3 shows a set-up of apparatus of a redox reaction.  
*Rajah 3 menunjukkan susunan radas bagi tindak balas redoks.*

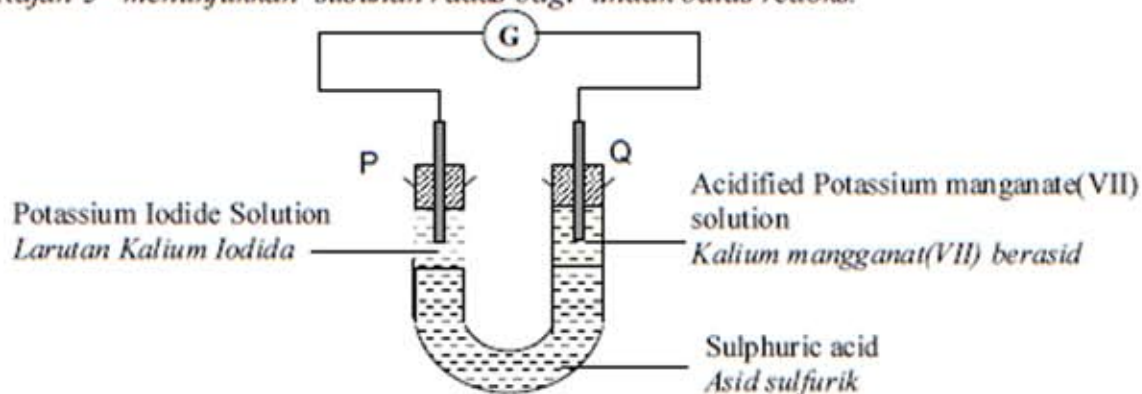


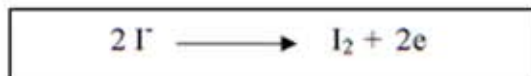
Diagram 3  
*Rajah 3*

Which of the following statements are correct ?

*Manakah antara pernyataan berikut adalah benar?*

- I Iodide ion,  $I^-$  is reduced  
*Ion Iodida,  $I^-$  mengalami penurunan*
- II Electrons flow from electrode P to Q  
*Elektron mengalir dari elektrod P ke Q*
- III The purple colour of acidified potassium manganate (VII) solution becomes colourless  
*Warna ungu larutan berasid kalium manganat (VII) menjadi tanpa warna*
- IV Manganate(VII) ion,  $MnO_4^-$  acts as the reducing agent  
*Ion manganat(VII),  $MnO_4^-$  bertindak sebagai agen penurunan*
- A I and II only
- B II and III only
- C II and IV only
- D I, II, III and IV

- 14 Half equation below represents a reaction.  
*Setengah persamaan di bawah mewakili satu tindak balas.*



What is meant by oxidation reaction based on the equation ?

*Apakah yang dimaksudkan dengan tindak balas pengoksidaan berdasarkan persamaan di atas?*

- A Electrons are received by iodine  
*Elektron diterima oleh iodin*
- B Electrons are received by iodide ions  
*Elektron diterima oleh ion iodida*
- C Electrons are released by iodine  
*Elektron dilepaskan oleh iodin*
- D Electrons are released by iodide ions  
*Elektron dilepaskan oleh ion iodida*
- 15 Diagram 4 shows the set-up of apparatus for the electrolysis of molten lead(II) bromide.  
*Rajah 4 menunjukkan susunan radas bagi elektrolisis leburan plumbum(II) bromida.*

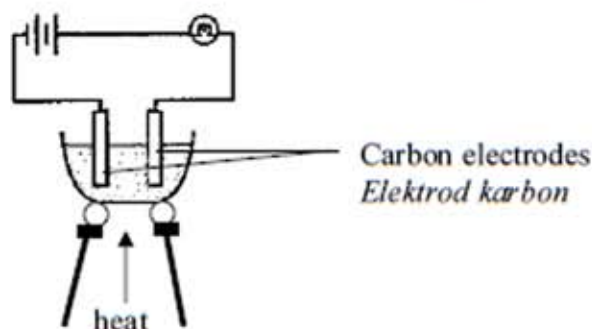


Diagram 4  
*Rajah 4*

State the correct observation for the reaction.

*Nyatakan pemerhatian yang betul bagi tindak balas ini*

- A Bromine is released at the anode  
*Bromin dibebaskan di anod*
- B Brown solid is deposited at the cathode  
*Pepejal perang terenap di katod*
- C Brown gas is released at the anode  
*Gas perang terbebas di anod*
- D The carbon electrode at anode is coated with grey metal  
*Elektrod karbon di anod disaluti dengan logam berwarna kelabu*

- 16 Which of the following reagents can change iodide ion to iodine?  
*Yang manakah antara reagen berikut dapat memukarkan ion iodida kepada iodin?*
- I Acidified potassium dichromate(VI) solution  
*Larutan kalium dikromat(VI) berasid*
  - II Iron(II) sulphate solution  
*Larutan ferum(II) sulfat*
  - III Lead(II) nitrate solution  
*Larutan plumbum(II) nitrat*
  - IV Bromine water  
*Air bromin*
- A I and II only  
*I dan II sahaja*
- B II and IV only  
*II dan IV sahaja*
- C I and IV only  
*I dan IV sahaja*
- D II and III only  
*II dan III sahaja*
- 17 Lead(II) bromide is not able to conduct electricity in solid state but can conduct electricity in molten state because  
*Plumbum(II) bromida tidak boleh mengalirkan arus elektrik dalam keadaan pepejal tetapi boleh mengalirkan arus elektrik dalam keadaan lebur kerana*
- A bromide ions and lead(II) ions are able to move freely in the molten state  
*ion bromida dan ion plumbum(II) bebas bergerak dalam keadaan lebur*
  - B the molecules in lead (II) bromide are able to move freely in the molten state  
*molekul plumbum(II) bromida bebas bergerak dalam keadaan lebur*
  - C bromine and lead atoms are free to move  
*atom bromin dan plumbum bebas bergerak*
  - D the bromide and lead(II) ions are held strongly together in the molten state  
*ion bromida dan ion plumbum(II) terikat kuat dalam keadaan leburan*

- 18 Table 3 shows the voltage produced by different type of cells. Based on this table , the cell that can produce 2.00 V can be set up using

*Jadual 3 menunjukkan bacaan voltan beberapa jenis sel. Berpandukan jadual ini, sel yang boleh membekalkan 2.00V boleh dibina dengan menggunakan*

Cell Sel	Voltage / V Voltan / V
Magnesium // Copper <i>Magnesium // kuprum</i>	2.70
Zinc // Copper <i>Zink // kuprum</i>	1.15
Lead // Copper <i>Plumbum // Kuprum</i>	0.45
Iron // Copper <i>Ferum // Kuprum</i>	0.70

Table 3  
*Jadual 3*

- A Magnesium // zinc  
*Magnesium // zink*
- B Iron // lead  
*Ferum // plumbum*
- C Magnesium // iron  
*Magnesium // ferum*
- D Magnesium // lead  
*Magnesium // Plumbum*
- 19 Which of the following is true about weak acid?  
*Pernyataan yang mana benar tentang asid lemah ?*
- A Unable to neutralize alkali  
*Tidak boleh meneutralkan alkali*
- B The pH value is more than 7.  
*Nilai pHnya lebih dari 7*
- C Able to change red litmus paper to blue.  
*Dapat menukarkan warna kertas litmus merah ke biru*
- D Ionizes partially in water to produce hydrogen ions.  
*Mengion separa dalam air untuk menghasilkan ion hidrogen*

- 20 Diagram 5 shows the set-up of apparatus done by a student to coat tin plate with silver. The electroplating process is however unsuccessful because  
*Rajah 5 menunjukkan susunan radas yang disediakan oleh se orang pelajar untuk menyadurkan kepingan logam timah dengan argentum. Proses penyaduran didapati tidak berjaya dilakukan kerana*

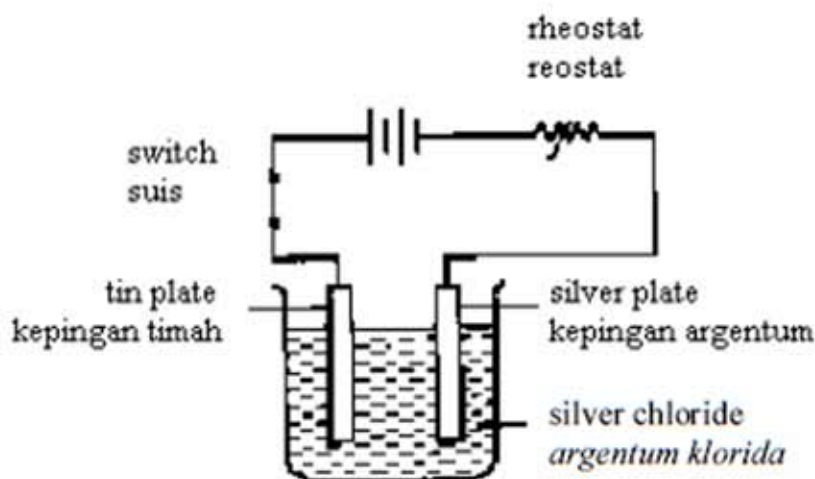


Diagram 5  
*Rajah 5*

- A A rheostat is used instead of an ammeter  
*reostat digunakan dan bukannya ammeter*
- B silver chloride is used as the electrolyte  
*argentum klorida digunakan sebagai elektrolit*
- C silver plate is connected to the anode  
*kepingan argentum disambungkan ke anod*
- D silver plate used is impure  
*kepingan argentum yang digunakan tidak tulen*
- 21 Which particle causes an aqueous solution of ammonia to exhibit alkaline properties?  
*Zarah yang manakah menyebabkan larutan ammonia memperlihatkan sifat-sifat alkali?*
- A  $\text{H}_3\text{O}^+$
- B  $\text{OH}^-$
- C  $\text{NH}_4^+$
- D  $\text{NH}_3$

- 22 Which of the following methods is suitable to prevent rusting of iron?  
*Kaedah yang manakah sesuai untuk mencegah pengkaratan besi?*
- A Painting the engine of a car  
*Mengecat enjin kereta*
- B Fixing bars of copper to the part of ship submerged in water  
*Menampal kepingan kuprum di bahagian kapal yang tenggelam dalam air*
- C Galvanizing the roof made of iron with tin  
*Menggalvani atap besi dengan logam timah*
- D Plating the metal surface with chromium  
*Menyadur permukaan logam dengan kromium*
- 23 The equation shows the reaction between sulphuric acid and sodium hydroxide.  
*Persamaan di bawah menunjukkan tindakbalas di antara asid sulfurik dan natrium hidroksida.*



What is the volume of  $1.0 \text{ mol dm}^{-3}$  sodium hydroxide solution which can neutralize  $25.0 \text{ cm}^3$  of  $1.0 \text{ mol dm}^{-3}$  sulphuric acid?

*Berapakah isipadu larutan natrium hidroksida  $1.0 \text{ mol dm}^{-3}$  yang diperlukan untuk meneutralkan  $25.0 \text{ cm}^3$   $1.0 \text{ mol dm}^{-3}$  asid sulfurik?*

- A  $12.5 \text{ cm}^3$
- B  $25.0 \text{ cm}^3$
- C  $50.0 \text{ cm}^3$
- D  $75.0 \text{ cm}^3$
- 24 Both ethanoic acid and hydrochloric acid with concentration of  $1 \text{ mol dm}^{-3}$  have  
*Kedua-dua asid etanoik dan asid hidroklorik yang berkepekatan  $1 \text{ mol dm}^{-3}$  mempunyai*
- I the same concentration of hydrogen ions  
*kepekatan ion hidrogen yang sama*
- II different degree of ionisation in water  
*darjah pengionan dalam air yang berbeza*
- III different pH value  
*nilai pH yang berbeza*
- IV the same concentration of hydroxide ions  
*kepekatan ion hidroksida yang sama*
- A I and II only
- B II and III only
- C III and IV only
- D I and IV only

- 25 When solid R is heated strongly, it produces a residue which is brown in colour when hot and turns yellow when cold. R may be  
*Apabila pepejal R dipanaskan dengan kuat, ia menghasilkan baki berwarna perang bila panas dan kuning bila sejuk. R mungkin*
- A Lead(II) carbonate  
*Plumbum(II) karbonat*
  - B Zinc carbonate  
*Zink karbonat*
  - C Copper(II) nitrate  
*Kuprum(II) nitrat*
  - D Iron(II) nitrate  
*Ferum(II) nitrat*
- 26 Which of the following compounds are needed to prepare ammonium sulphate fertiliser?  
*Antara sebatian berikut, yang manakah diperlukan untuk menyediakan baja ammonium sulfat?*
- A Ammonia solution and sodium sulphate  
*Larutan ammonia dan natrium sulfat*
  - B Ammonium chloride and potassium chloride  
*Ammonium klorida dan kalium klorida*
  - C Ammonia solution and sulphuric acid  
*Larutan ammonia dan asid sulfurik*
  - D Ammonium nitrate solution and sulphuric acid  
*Larutan ammonium nitrat dan asid sulfurik*
- 27 Which of the following salts is insoluble in water?  
*Antara garam berikut, yang manakah tidak larut dalam air?*
- A Silver nitrate  
*Argentum nitrat*
  - B Calcium chloride  
*Kalsium klorida*
  - C Ammonium sulphate  
*Ammonium sulfat*
  - D Lead(II) carbonate  
*Plumbum(II) karbonat*

- 28 The equation below shows thermal decomposition of 12.4 g of copper(II) carbonate.  
*Persamaan di bawah menunjukkan penguraian haba ke atas 12.4 g kuprum(II) karbonat.*

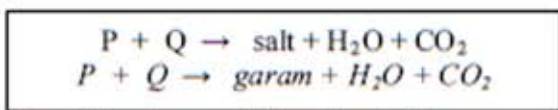


What is the mass of copper(II) oxide formed?  
*Apakah jisim kuprum(II) oksida yang terbentuk?*

[ Relative atomic mass : Cu=64, O=16, C=12 ]

- A 4.4 g  
B 8.0 g  
C 44.0 g  
D 80.0 g
- 29 Which of the following ions form a white precipitate which is insoluble in excess sodium hydroxide solution?  
*Antara ion-ion berikut, yang manakah membentuk mendakan putih yang tak larut dalam larutan natrium hidroksida berlebihan?*
- A  $\text{Al}^{3+}$   
B  $\text{Mg}^{2+}$   
C  $\text{Pb}^{2+}$   
D  $\text{Zn}^{2+}$
- 30 Paracetamol is an example of  
*Parasetamol ialah satu contoh*
- A an antibiotic  
*antibiotik*  
B an analgesic  
*analgesik*  
C a traditional medicine  
*ubat tradisional*  
D a psychotherapeutic medicine  
*ubat psikoterapeutik*

- 31 The chemical equation below shows the reaction between P and Q.  
*Persamaan kimia di bawah menunjukkan tindak balas di antara P dan Q.*



Which of the following could be P and Q?

*Yang manakah antara berikut mungkin P dan Q?*

- A Zinc and hydrochloric acid  
*Zink dan asid hidroklorik*
- B Lead(II) oxide and nitric acid  
*Plumbum(II) oksida dan asid nitrik*
- C Sodium carbonate and sulphuric acid  
*Natrium karbonat dan asid sulfurik*
- D Magnesium carbonate and sodium hydroxide  
*Magnesium karbonat dan natrium hidroksida*
- 32 The equation below shows the oxidation of sulphur dioxide to sulphur trioxide in the manufacturing of sulphuric acid.  
*Persamaan di bawah menunjukkan pengoksidaan sulfur dioksida kepada sulfur trioksida dalam pembuatan asid sulfurik.*



The reaction is catalysed by

*Tindak balas ini dimungkinkan oleh*

- A Iron  
*Ferum*
- B Platinum  
*Platinum*
- C Vanadium(V) oxide  
*Vanadium(V) oksida*
- D Manganese(IV) oxide  
*Mangan(IV) oksida*
- 33 Why are detergents more effective than soap?  
*Mengapakah detergent lebih berkesan daripada sabun?*
- A Detergents are soluble in grease, whereas soaps are insoluble in grease.  
*Detergen larut dalam gris, manakala sabun tidak larut dalam gris.*
- B Detergents reduce the surface tension of water whereas soaps do not.  
*Detergen mengurangkan ketegangan permukaan air manakala sabun tidak.*
- C Detergents are biodegradable whereas soaps are non-biodegradable.  
*Detergen boleh terurai secara biodegradasi manakala sabun tidak.*
- D Detergents do not form scum in hard water, whereas soaps form scum in hard water.  
*Detergen tidak membentuk kekat dalam air liat manakala sabun membentuk kekat dalam air liat.*

- 34 In the saponification process, concentrated sodium hydroxide solution is added to boiling vegetable oils to produce X and soap. What is X?  
*Dalam proses saponifikasi, larutan natrium hidroksida pekat ditambahkan kepada minyak sayuran yang mendidih untuk menghasilkan X dan sabun. Apakah X?*
- A Glycerol  
*Gliserol*
  - B Ethanol  
*Etanol*
  - C Propanoic acid  
*Asid propanoik*
  - D Ethyl methanoate  
*Etil metanoat*
- 35 Which of the following statements explains why ceramic is suitable to make an engine block?  
*Yang manakah antara pernyataan berikut menerangkan mengapa seramik sesuai untuk membina blok enjin?*
- A Ceramic is chemically inert  
*Seramik adalah lengai secara kimia*
  - B Ceramic is an electric conductor  
*Seramik adalah konduktor elektrik*
  - C Ceramic can withstand high temperature  
*Seramik boleh tahan suhu yang tinggi*
  - D Ceramic has a low specific heat capacity  
*Seramik mempunyai muatan haba tentu yang rendah*
- 36 Which of the following food additives can be used to make food stay fresh longer and taste better?  
*Antara bahan tambah makanan berikut yang manakah boleh digunakan untuk mengekalkan kesegaran makanan dan meningkatkan rasanya?*
- A Tartrazine and sodium benzoate  
*Tartrazina dan natrium benzoat*
  - B Ascorbic acid and sodium benzoate  
*Asid askorbik dan natrium benzoat*
  - C Monosodium glutamate and tartrazine  
*Mononatrium glutamat dan tartrazina*
  - D Monosodium glutamate and ascorbic acid  
*Mononatrium glutamat dan asid askorbik*

- 37 Diagram 6 shows an energy level diagram  
*Rajah 6 menunjukkan gambar rajah aras tenaga.*

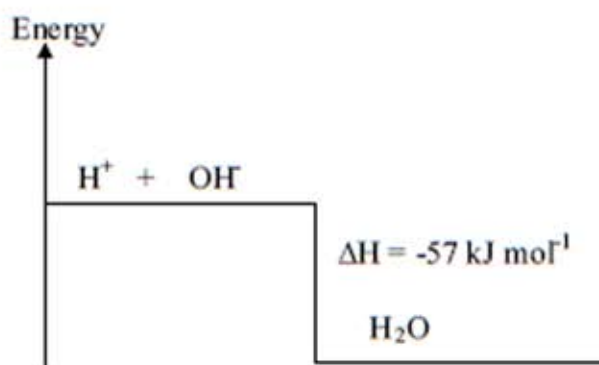
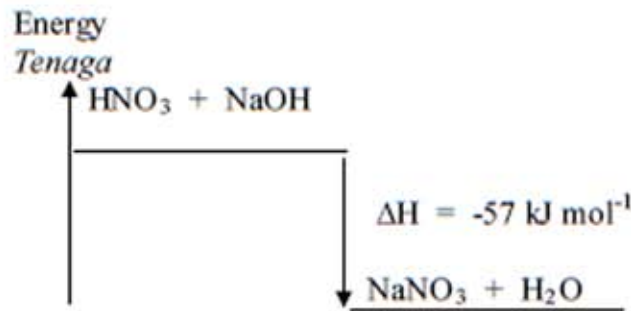


Diagram 6  
*Rajah 6*

Based on Diagram 6, it can be concluded that  
*Berdasarkan rajah di atas, dapat disimpulkan bahawa*

- A the heat of neutralization is  $-57 \text{ kJ mol}^{-1}$   
*haba peneutralan ialah  $-57 \text{ kJ mol}^{-1}$*
- B  $57 \text{ kJ}$  of energy is needed for the reaction.  
 *$57 \text{ kJ}$  tenaga diperlukan untuk tindak balas itu*
- C the products of reaction contain more energy than the reactants.  
*hasil tindak balas mengandungi lebih tenaga berbanding bahan tindak balas*
- D the temperature at the end of the reaction is lower than that at the beginning of the reaction  
*suhu pada akhir tindak balas adalah lebih rendah berbanding pada awal tindak balas*
- 38 Which of the following changes can increase the amount of product formed in a chemical reaction?  
*Antara perubahan berikut, yang manakah dapat meningkatkan jumlah hasil dalam suatu tindakbalas kimia?*
- A Increase the concentration of the reactant  
*Meningkatkan kepekatan bahan tindak balas*
- B Reduce the mass of catalyst  
*Mengurangkan jisim mangkin*
- C Increase the size of a solid reactant  
*Meningkatkan saiz bahan tindakbalas*
- D Decrease the volume of reactant  
*Mengurangkan isipadu larutan bahan tindakbalas*

- 39 Diagram 7 shows the energy level diagram of a reaction.  
*Rajah 7 menunjukkan gambarajah aras tenaga bagi suatu tindak balas*



Which of the following acids is suitable to replace nitric acid,  $\text{HNO}_3$  to obtain the same  $\Delta H$  value?

*Asid yang manakah sesuai untuk menggantikan asid nitrik,  $\text{HNO}_3$  bagi mendapatkan nilai  $\Delta H$  yang sama?*

- A Ethanoic acid,  $\text{CH}_3\text{COOH}$   
*Asid etanoik,  $\text{CH}_3\text{COOH}$*
- B Hydrochloric acid,  $\text{HCl}$   
*Asid hidroklorik,  $\text{HCl}$*
- C Carbonic acid,  $\text{H}_2\text{CO}_3$   
*Asid karbonik,  $\text{H}_2\text{CO}_3$*
- D Sulphuric acid,  $\text{H}_2\text{SO}_4$   
*Asid sulfurik,  $\text{H}_2\text{SO}_4$*
- 40 The following is the thermochemical equation for a reaction.  
*Berikut adalah persamaan termokimia bagi satu tindak balas.*



Calculate the heat change when  $50 \text{ cm}^3$  of  $1.0 \text{ mol dm}^{-3}$  copper(II) sulphate solution reacts with excess zinc.

*Hitung perubahan haba apabila  $50 \text{ cm}^3$  larutan kuprum(II) sulfat  $1.0 \text{ mol dm}^{-3}$  bertindak balas dengan zink yang berlebihan.*

- A 10.5 kJ  
 B 105 kJ  
 C 420 kJ  
 D 4200 kJ

- 41 Diagram 8 shows the set-up of the apparatus to determine the heat of precipitation of silver chloride.

Rajah 8 menunjukkan gambar rajah susunan radas untuk menentukan haba pemendakan bagi argentum klorida.

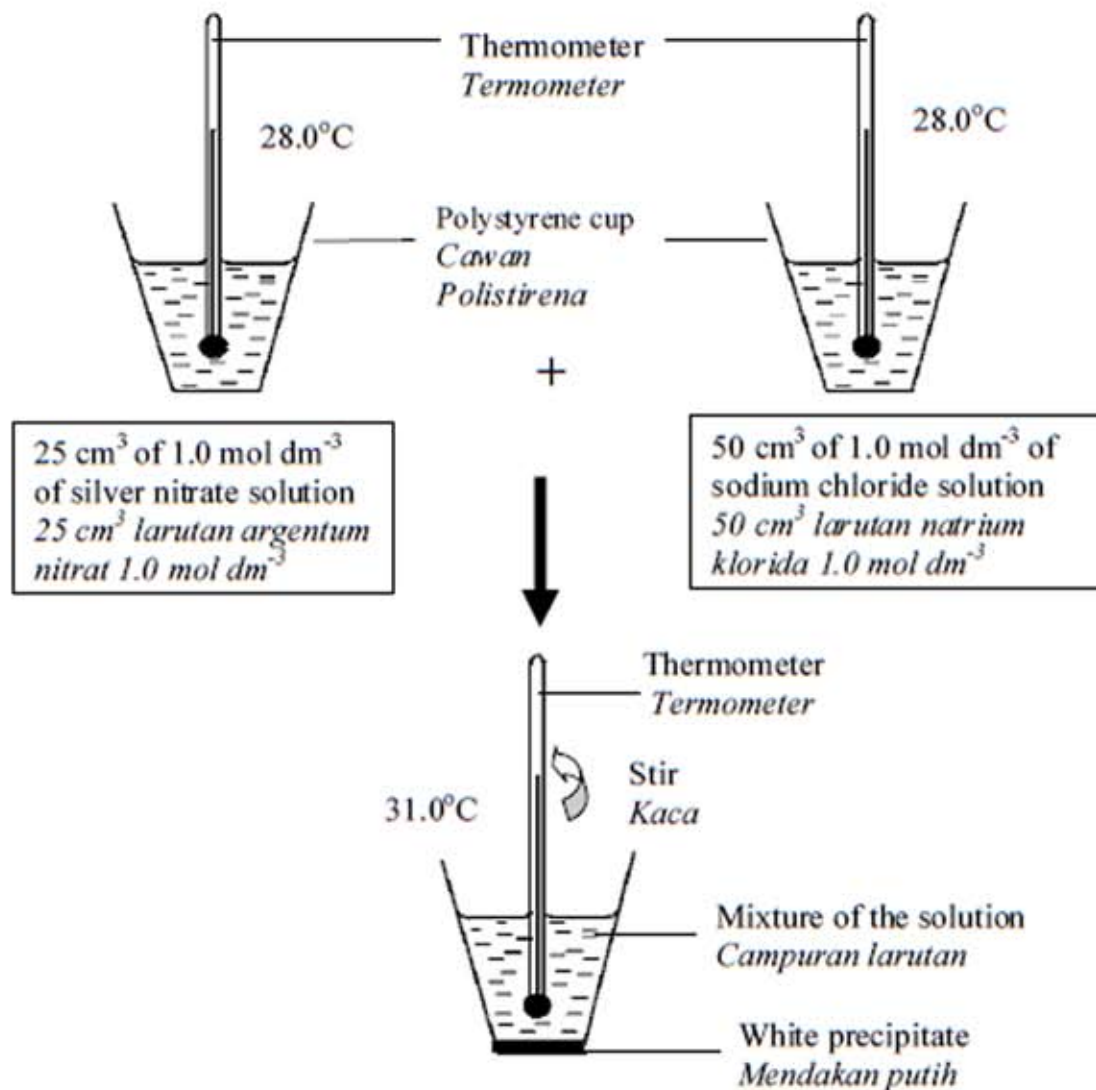


Diagram 8  
Rajah 8

What is the heat of precipitation of silver chloride?

Berapakah haba pemendakan bagi argentum klorida?

[Specific heat capacity of solution = 4.2 Jg<sup>-1</sup>°C<sup>-1</sup>, density of solution = 1 g cm<sup>-3</sup>]

[Muatan haba tentu larutan = 4.2 Jg<sup>-1</sup>°C<sup>-1</sup>, ketumpatan larutan = 1 g cm<sup>-3</sup>]

- A 37800 kJ mol<sup>-1</sup>  
 B 18900 kJ mol<sup>-1</sup>  
 C 18.9 kJ mol<sup>-1</sup>  
 D 37.8 kJ mol<sup>-1</sup>

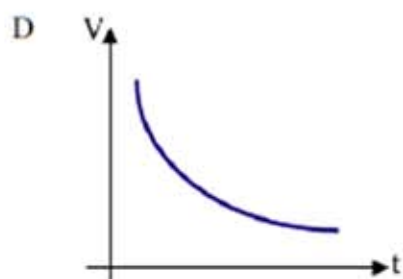
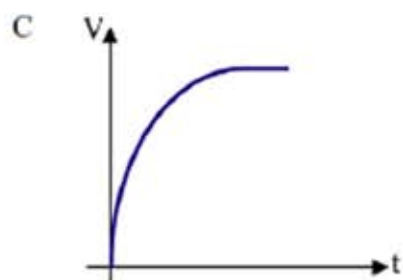
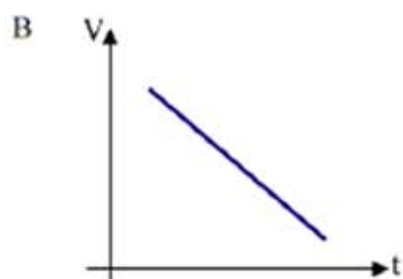
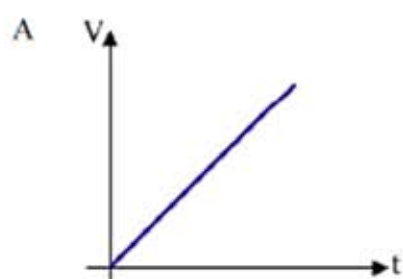
- 42 The following equation shows the reaction between excess zinc powder and dilute hydrochloric acid:

*Persamaan berikut menunjukkan tindak balas antara serbuk zink berlebihan dengan asid hidroklorik cair:*



Which of the following graphs represents the volume of hydrogen gas (V) released against time (t)?

*Antara graf berikut yang manakah mewakili isipadu gas hidrogen (V) yang dibebaskan melawan masa (t)?*



- 43 Diagram 9 shows the set-up of apparatus used to study the rate of reaction of marble chips and nitric acid.

*Rajah 9 menunjukkan susunan radas yang digunakan untuk mengkaji kadar tindak balas antara ketulan marmar dengan asid nitrik*

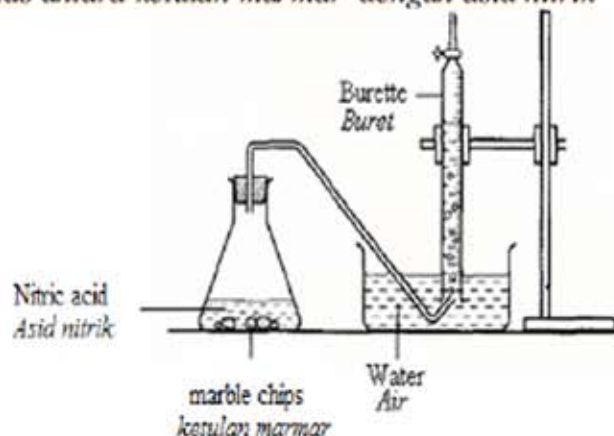


Diagram 9  
*Rajah 9*

The rate of reaction in this experiment can be increased by  
*Kadar tindak balas bagi eksperimen ini boleh ditingkatkan dengan*

- A using the smaller sizes of marble chips  
*menggunakan saiz ketulan marmar yang lebih kecil*
  - B using a larger conical flask.  
*menggunakan kelalang kon yang lebih besar*
  - C adding water to the nitric acid.  
*menambahkan air ke dalam asid nitrik*
  - D decreasing the temperature of the nitric acid  
*merendahkan suhu asid nitrik*
- 44 Effective collision is the collision where  
*Perlanggaran berkesan ialah perlanggaran yang*
- A its energy is less than the activation energy and with correct orientation  
*tenaganya kurang daripada tenaga pengaktifan dan dalam orientasi yang betul.*
  - B has a low energy  
*mempunyai tenaga yang rendah*
  - C its energy is equal to the activation energy  
*tenaganya sama dengan dengan tenaga pengaktifan*
  - D its energy is greater than the activation energy with the correct orientation  
*tenaganya lebih besar daripada tenaga pengaktifan dan dalam orientasi yang betul*

- 45 Excess zinc granules are added to  $50 \text{ cm}^3$  of  $0.1 \text{ mol dm}^{-3}$  hydrochloric acid. The hydrogen gas evolved is collected at 30 second intervals. The results are tabulated in Table 4.

*Butiran zink yang berlebihan ditambahkan kepada  $50 \text{ cm}^3$  asid hidroklorik  $0.1 \text{ mol dm}^{-3}$ . Keputusan dicatatkan di dalam Jadual 4.*

Time /s <i>Masa/s</i>	0	30	60	90	120	150
Total volume of $\text{H}_2/\text{cm}^3$ <i>Jumlah isipadu <math>\text{H}_2/\text{cm}^3</math></i>	0	11	18	22	24	24

Table 4  
*Jadual 4*

What information can you obtain from the results of this experiment?

*Apakah maklumat yang boleh diperolehi daripada keputusan eksperimen ini?*

- I No hydrogen gas is released after 120 seconds  
*Tiada gas hidrogen dibebaskan selepas 120 saat*
  - II The average rate of reaction is  $0.16 \text{ cm}^3 \text{ s}^{-1}$   
*Purata kadar tindak balas ialah  $0.16 \text{ cm}^3 \text{ s}^{-1}$*
  - III The total volume of hydrogen gas collected is  $99 \text{ cm}^3$   
*Jumlah isipadu gas yang terkumpul ialah  $99 \text{ cm}^3$*
  - IV The rate of hydrogen gas released decreases with time  
*Kadar pembebasan gas berkurang dengan masa*
- A IV only
  - B I and IV
  - C I, II and IV
  - D I, III and IV
- 46 The following chemical equation shows a reaction for ethanol.  
*Persamaan kimia berikut menunjukkan satu tindak balas bagi etanol.*



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*

- 47 Hexene is classified as an unsaturated hydrocarbon because  
*Heksena dikelaskan sebagai hidrokarbon tidak tepu kerana*
- A it contains only carbon and hydrogen .  
*ia mengandungi karbon dan hidrogen sahaja.*
- B it is a liquid at room temperature.  
*ia adalah cecair pada suhu bilik.*
- C it is less dense than water.  
*ia kurang tumpat daripada air*
- D it has a double bond between carbon atoms.  
*ia mempunyai ikatan ganda dua di antara atom karbon*
- 48 Diagram 10 shows the structural formula of a compound.  
*Rajah 10 menunjukkan formula struktur bagi suatu sebatian..*

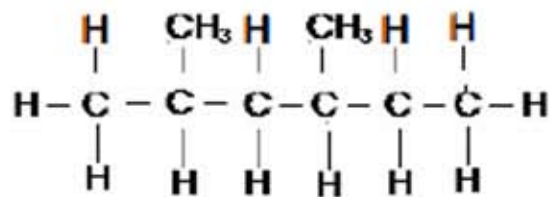


Diagram 10  
*Rajah 10*

- Name the compound using IUPAC nomenclature.  
*Namakan sebatian tersebut menggunakan penamaan IUPAC.*
- A 2,4-dimethylhexane  
*2,4-dimetilheksana*
- B 3,5-dimethylhexane  
*3,5-dimetilheksana*
- C 1,1,3-trimethylpentane  
*1,1,3-trimetilpentana*
- D 3,5,5-trimethylpentane  
*3,5,5-trimetilpentana*

49 Which chemical formulae represent saturated hydrocarbon?  
*Formula kimia yang manakah mewakili hidrokarbon tepu?*



A I and II

*I dan II*

B I and III

*I dan III*

C II and III

*II dan III*

D II and IV

*II dan IV*

50 The molecular formulae of two molecules P and Q are as follows.  
*Formula molekul bagi molekul P dan Q adalah seperti berikut*



P



Q

Which of the following statements is true for both molecules P and Q?

*Di antara pernyataan berikut yang manakah benar bagi kedua – dua molekul P dan Q?*

A They have different functional groups

*Kedua – duanya mempunyai kumpulan berfungsi yang berlainan*

B All their physical properties are similar

*Semua sifat fiziknya sama*

C All their chemical properties are different

*Semua sifat kimianya berbeza*

D They can be represented by the same general formula

*Kedua – duanya boleh diwakili oleh satu formula am yang sama*

**END OF QUESTION PAPER**  
**KERTAS SOALAN TAMAT**