



SULIT

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**INFORMATION FOR CANDIDATES**  
**MAKLUMAT UNTUK CALON**

1. This question paper consists of **50** questions.  
*Kertas soalan ini mengandungi **50** soalan.*
2. Answer **all** questions.  
*Jawab **semua** soalan.*
3. Each question is followed by four alternative answers, **A,B,C** and **D**. For each question, choose one answer only. Blacken your answer on the objective answer sheet provided.  
*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. If you wish to change your answer, erase the blackened mark that you have made. Then blacken the new answer.  
*Sekiranya anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.*
6. The diagrams in the questions provided are not drawn to scale unless stated.  
*Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.*
7. You may use a non-programmable scientific calculator.  
*Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*

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

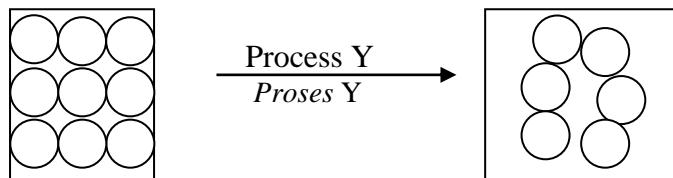


Diagram 1

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

- A** Evaporation  
*Penyejatan*
- B** Melting  
*Peleburan*
- C** Condensation  
*Kondensasi*
- D** Boiling  
*Pendidihan*

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- 2 Diagram 2 shows the body of a car which is made up of alloy Y.  
*Rajah 2 menunjukkan badan sebuah kereta yang diperbuat daripada aloi Y.*



Diagram 2

Which of the following is alloy Y?  
*Antara berikut, yang manakah adalah aloi Y?*

- A Pewter  
*Piuter*
  - B Bronze  
*Gangsa*
  - C Steel  
*Keluli*
  - D Magnelium  
*Magnelium*
- 3 Which of the following medicines is an antibiotic?  
*Antara ubat berikut, yang manakah suatu antibiotik?*
- A Insulin  
*Insulin*
  - B Aspirin  
*Aspirin*
  - C Streptomycin  
*Streptomisin*
  - D Paracetamol  
*Parasetamol*
- 4 Diagram 3 shows the electron arrangement of atom P.  
*Rajah 3 menunjukkan susunan elektron bagi atom P.*

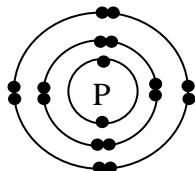


Diagram 3

Which of the following electron arrangement has the same number of valence electrons as atom P ?

*Antara susunan elektron berikut, yang manakah mempunyai bilangan electron valens yang sama dengan atom P ?*

- A** 2.8
  - B** 2.8.1
  - C** 2.8.8.2
  - D** 2.8.8.3
- 5** Diagram 4 shows a balloon which contains  $6.02 \times 10^{23}$  of gas particles. What is the number of mole of the gas in the balloon?

*Rajah 4 di bawah menunjukkan sebiji belon mengandungi  $6.02 \times 10^{23}$  zarah gas. Berapakah bilangan mol gas itu didalam belon tersebut?*

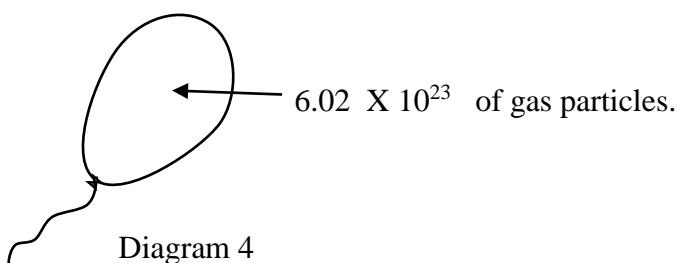


Diagram 4

- A** 0.5
- B** 1.0
- C** 2.0
- D** 3.0



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- 6** Diagram 5 below shows elements in The Periodic Table of Elements.  
*Rajah 5 di bawah menunjukkan unsur-unsur dalam Jadual Berkala Unsur.*

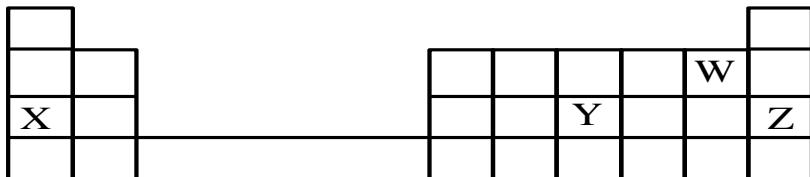


Diagram 5

Which element is a Group 17 element?

*Unsur manakah adalah unsur Kumpulan 17?*

- |   |   |
|---|---|
| A | W |
| B | X |
| C | Y |
| D | Z |

- 7 Which substances is an ionic compound?  
*Antara bahan berikut, yang manakah sebatian ionik?*

A Carbon dioxide, CO<sub>2</sub>  
*Karbon dioksida,*

B Tetrachloromethane  
*Tetraklorometana*

C Sugar solution  
*Larutan gula*

D Magnesium oxide, MgO  
*Magnesium oksida*

- 8** Which of the following substances is an electrolyte?  
*Antara bahan berikut, yang manakah elektrolit?*

I     Sodium chloride solution  
*Larutan sodium klorida*

II    Glucose solution  
*Larutan glukosa*

III   Potassium nitrate solution  
*Larutan kalium nitrat*

IV   Solid lead(II) bromide  
*Pepejal plumbum(II) bromida*

**A** I and II



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- B** I and III
- C** II and III
- D** II and IV

**9** Which of the following is a monoprotic acid ?

*Antara yang berikut, yang manakah asid monoprotik ?*

- A** Nitric acid,  $\text{HNO}_3$   
*Asid nitric*
- B** Sulphuric acid,  $\text{H}_2\text{SO}_4$   
*Asid sulfuric*
- C** Phosphoric acid,  $\text{H}_3\text{PO}_4$   
*Asid fosforik*
- D** Carbonic acid,  $\text{H}_2\text{CO}_3$   
*Asid karbonik*

**10** Which salt is soluble in water?

*Garam manakah yang larut dalam air?*

- A** Silver chloride  
*Argentum klorida*
- B** Zinc carbonate  
*Zink karbonat*
- C** Calcium sulphate  
*Kalsium sulfat*
- D** Copper(II) nitrate  
*Kuprum(II) nitrat*

**11** Which of the following mixtures has the highest initial rate of reaction?

*Di antara campuran berikut, yang manakah mempunyai kadar tindakbalas awal tertinggi?*

- A** 5 g zinc powder and  $0.1 \text{ mol dm}^{-3}$  nitric acid  
*5 g serbuk zink dan  $0.1 \text{ mol dm}^{-3}$  asid nitrik*



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- B** 10 g zinc powder and 0.2 mol  $\text{dm}^{-3}$  nitric acid .  
*10 g serbuk zink dan 0.2 mol dm<sup>-3</sup> asid nitrik*
- C** 5 g solid zinc metal foil and 0.1 mol  $\text{dm}^{-3}$  nitric acid  
*5 g kepingan logam zink dan 0.1 mol dm<sup>-3</sup> asid nitrik*
- D** 10 g zinc metal foil and 0.2 mol  $\text{dm}^{-3}$  nitric acid  
*10 g kepingan logam zink dan 0.2 mol dm<sup>-3</sup> asid nitrik*
- 12** What is the functional group of an alkene?  
*Apakah kumpulan berfungsi bagi suatu alkena?*

- A** – OH
- B** C = C
- C** – COO –
- D** – COOH
- 13** Which of the following is a reduction process?  
*Antara yang berikut yang manakah proses penurunan?*
- A** Iron(II) ion converted to iron(III) ion  
*Ion ferum(II) bertukar kepada ion ferum(III)*
- B** Zinc gain oxygen to produce zinc oxide  
*Zink menerima oksigen untuk menghasilkan zink oksida*
- C** A copper(II) ion gains two electrons  
*Ion kuprum(II) menerima dua elektron*
- D** A magnesium atom loses two electrons  
*Satu atom magnesium kehilangan dua elektron*
- 14** Which process has the lowest rate of reaction?  
*Proses manakah yang mempunyai kadar tindak balas yang paling rendah?*

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- A** Combustion  
*Pembakaran*
- B** Fermentation  
*Penapaian*
- C** Neutralisation  
*Peneutralan*
- D** Photosynthesis  
*Fotosintesis*

- 15** Diagram 6 below shows the symbol of an atom, Z.  
*Rajah 6 di bawah menunjukkan simbol bagi atom Z.*

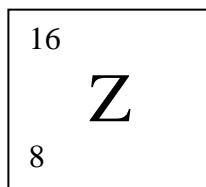


Diagram 6

Which of the following is true about the subatomic particles of atom Z?  
*Yang manakah benar tentang zarah sub atom Z?*

|          | Proton number<br><i>Nombor proton</i> | Nucleon number<br><i>Nombor nukleon</i> | Electron arrangement<br><i>Susunan elektron</i> |
|----------|---------------------------------------|---|---|
| <b>A</b> | 8                                     | 16                                      | 2.6   |
| <b>B</b> | 8                                     | 16                                      | 2.8.6   |
| <b>C</b> | 16                                    | 8                                       | 2.6   |
| <b>D</b> | 16                                    | 8                                       | 2.8.6   |

- 16** Diagram 7 shows a musical instrument.  
*Rajah 7 menunjukkan sejenis alat muzik.*

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Diagram 7

Which alloy is used to make this instrument?  
*Aloi manakah yang digunakan untuk membuat alat ini?*

- A** Brass  
*Loyang*
- B** Pewter  
*Piuter*
- C** Bronze  
*Gangsa*
- D** Duralumin  
*Duralumin*

- 17** Which of the following ions reduce the effectiveness of soaps in hard water?  
*Antara ion-ion berikut, yang manakah mengurangkan keberkesanan sabun dalam air liat?*
- A** Calcium ions and sodium ions  
*Ion kalsium dan ion natrium*
  - B** Aluminium ions and iron(II) ions  
*Ion aluminium dan ion ferum(II)*
  - C** Calcium ions and magnesium ions  
*Ion kalsium dan ion magnesium*

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- D** Magnesium ions and potassium ions  
*Ion magnesium dan ion kalium*

- 18** Diagram 8 shows a graph for the cooling of liquid napthalene.  
*Rajah 8 menunjukkan graf bagi penyejukan cecair naftalena.*

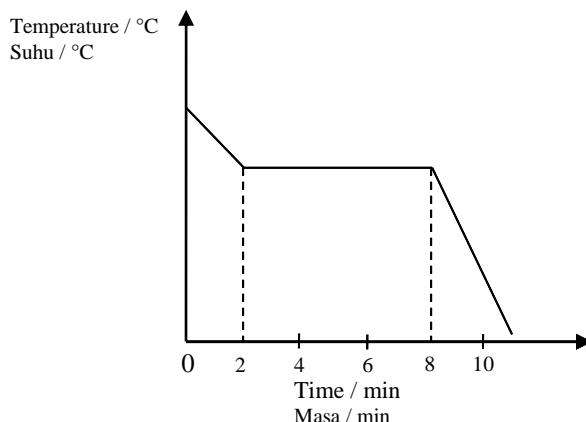


Diagram 8

Which of the following is true about the napthalene particles at the tenth minute?  
*Berikut yang manakah benar mengenai zarah naftalena pada minit kesepuluh?*

- A** Molecules are packed closely but not in orderly arrangement.  
*Molekul-molekul tersusun rapat tetapi tidak teratur.*
- B** Some of the molecules are free to move.  
*Sebahagian daripada molekul-molekul bebas bergerak.*
- C** Molecules are closely packed and free to move.  
*Molekul-molekul tersusun rapat dan bebas bergerak.*
- D** Molecules are closely packed and vibrate.  
*Molekul-molekul tersusun rapat dan bergetar.*

19. Diagram 9 shows the electron arrangement in a substance  $X_2$ .  
Number of neutrons for X is 7. Find the relative atomic mass for X.  
*Rajah 9 menunjukkan susunan elektron bagi satu bahan,  $X_2$ .*  
*Bilangan neutron X ialah 7. Dapatkan jisim atom relatif bagi X.*

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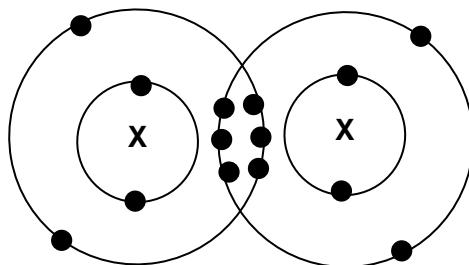


Diagram 9

- A** 7
- B** 8
- C** 10
- D** 14

- 20** Which halogens exist as gas at room temperature and pressure?  
*Halogen manakah yang wujud sebagai gas pada suhu dan tekanan bilik?*

- A** Chlorine and bromine  
*Klorin dan bromin*
- B** Chlorine and iodine  
*Klorin dan iodin*
- C** Fluorine and chlorine  
*Florin dan klorin*
- D** Bromine and iodine  
*Bromin dan iodin*

- 21** Which of the following compound has high melting point?  
*Antara sebatian yang berikut, yang manakah mempunyai takat lebur yang tinggi?*

- A** Magnesium sulphate  
*Magnesium sulfat*
- B** Carbon dioxide  
*Karbon dioksida*
- C** Hydrogen chloride  
*Hidrogen klorida*
- D** Ethyl ethanoate  
*Etil etanoat*

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- 22 Diagram 10 shows the apparatus set -up of an electrolysis by using carbon electrodes.

Rajah 10 menunjukkan susunan radas bagi elektrolisis dengan menggunakan elektrod-elektrod karbon.

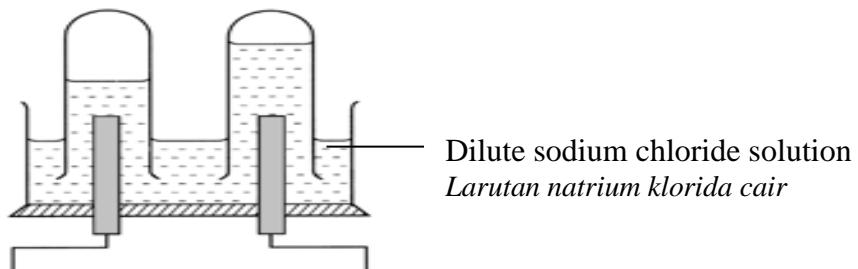


Diagram 10

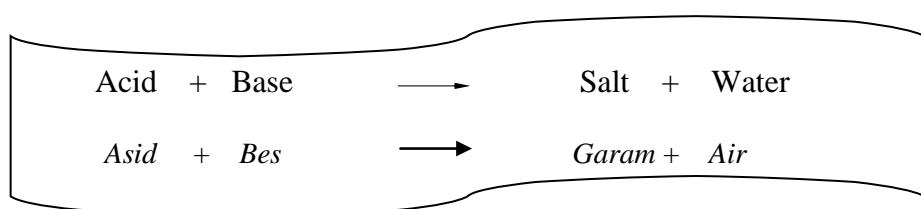
What are the selectively discharged ions in this reaction?

Apakah ion –ion yang dipilih untuk dinyahcas dalam tindak balas ini?

|   | Anode<br><i>Anod</i> | Cathode<br><i>Katod</i> |
|---|----------------------|-------------------------|
| A | $\text{Cl}^-$        | $\text{H}^+$            |
| B | $\text{Cl}^-$        | $\text{Na}^+$           |
| C | $\text{OH}^-$        | $\text{H}^+$            |
| D | $\text{OH}^-$        | $\text{Na}^+$           |

- 23 The following equation represents neutralisation reaction.

Persamaan berikut mewakili tindak balas peneutralan.



Which pairs of reactants produce neutralization reaction?

Antara pasangan bahan tindak balas berikut, yang manakah merupakan tindak balas peneutralan?

- A Sulphuric acid and magnesium nitrate  
*Asid sulfurik dan magnesium nitrat*
- B Sulphuric acid and magnesium oxide  
*Asid sulfurik dan magnesium oksida*



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- C Hydrochloric acid and magnesium chloride  
*Asid hidroklorik dan magnesium klorida*
- D Hydrochloric acid and magnesium sulphate  
*Asid hidroklorik dan magnesium sulfat*

- 24** The following information shows the properties of salt P solution.  
*Maklumat berikut menunjukkan sifat-sifat larutan garam P.*

Form white precipitate when added to barium hydroxide solution.  
*Membentuk mendakan putih apabila ditambah kepada larutan barium hidroksida*

What is salt P ?  
*Apakah garam P ?*

- A Lithium nitrate  
*Lithium nitrat*
- B Lithium sulphate  
*Lithium sulfat*
- C Potassium iodide  
*Kalium iodida*
- D Potassium chloride  
*Kalium klorida*

- 25** The following equation shows a reaction between hydrochloric acid and granulated magnesium carbonate to produce carbon dioxide gas.  
*Persamaan berikut menunjukkan tindak balas antara asid hidroklorik dengan ketulan magnesium karbonat untuk menghasilkan gas karbon dioksida.*



Which of the following will increase the rate of gas release?  
*Antara yang berikut, manakah akan meningkatkan kadar pembebasan gas?*

- A Decrease the concentration of hydrochloric acid  
*Merendahkan kepekatan asid hidroklorik*
- B Increase the volume of hydrochloric acid  
*Menambahkan isipadu asid hidroklorik*

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- C Use powder magnesium carbonate  
*Gunakan serbuk magnesium karbonat*
- D Decrease the temperature of the mixture  
*Merendahkan suhu campuran*

- 26** Diagram 11 below shows molecular formulae of two hydrocarbon compounds.  
*Rajah 11 di bawah menunjukkan formula molekul bagi dua sebatian hidrokarbon.*

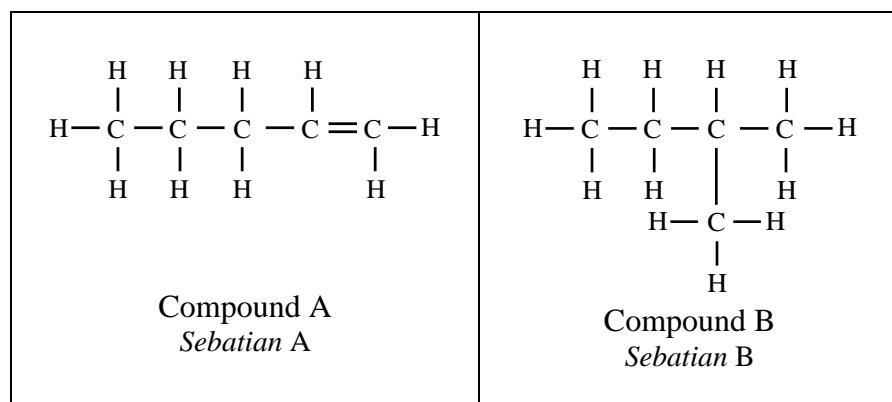


Diagram 11

Which of the following is **true** about compounds A and B?  
*Antara berikut, yang manakah benar tentang sebatian A dan B?*

- A Compound B is soluble in water.  
*Sebatian B larut dalam air*
  - B Compound A is soluble in water.  
*Sebatian A larut dalam air*
  - C Compound B is an unsaturated hydrocarbon  
*Sebatian B adalah hidrokarbon tak tak tepu*
  - D Compound A is an unsaturated hydrocarbon  
*Sebatian A adalah hidrokarbon tak tepu*
- 27** The following information is about a redox reaction.  
*Maklumat berikut adalah mengenai satu tindakbalas redoks.*

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Fe<sup>3+</sup> ion can be reduced to Fe<sup>2+</sup> ion by adding zinc powder.

Which of the following can replace zinc powder ?

Antara berikut, yang manakah dapat menggantikan serbuk zink ?

- A** Bromine water  
*Air bromin*
- B** Acidified potassium manganate (VII) solution  
*Larutan kalium manganat(VII) berasid*
- C** Acidified potassium dichromate (VI) solution  
*Larutan kalium dikromat (VI) berasid*
- D** Potassium iodide solution  
*Larutan kalium iodida*

**28** Diagram 12 shows an exothermic reaction.

*Rajah 12 menunjukkan satu tindakbalas eksotermik.*

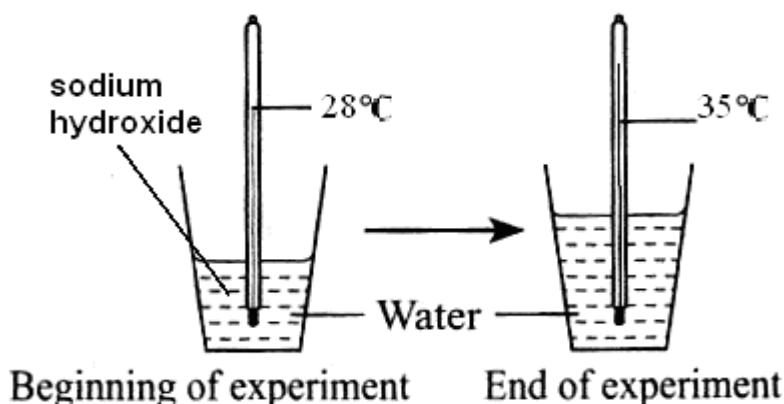


Diagram 12

Which statement is correct?

*Pernyataan manakah yang betul ?*

- A** Heat is released  
*Haba dibebaskan*
- B** The initial temperature is higher than the final temperature  
*Suhu awal lebih tinggi daripada suhu akhir*
- C** Container of reaction mixture become cold  
*Bekas bagi campuran tindak balas menjadi sejuk*

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- D** Heat is absorbed from the surrounding  
*Haba diserap daripada persekitaran*
- 29** Isotope A is used to diagnose thyroid disease.  
Which of the following is isotope A ?  
*Isotop A digunakan untuk mengesan penyakit tiroid.*  
*Antara berikut yang manakah isotop A ?*
- A Cobalt-60  
*Kobalt-60*
- B Carbon-12  
*Karbon-12*
- C Iodine-131  
*Iodin-131*
- D Phosphorus-32  
*Fosforus-32*
- 30** Diagram 13 shows a racing car. The body of the car is made of substance Q.  
*Rajah 13 menunjukkan sebuah kereta lumba. Badan kereta tersebut diperbuat daripada bahan Q.*

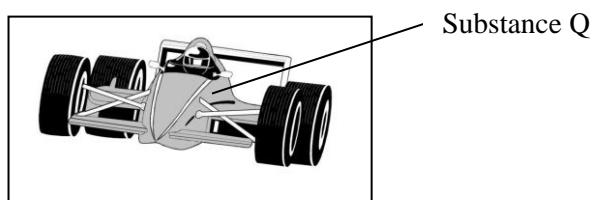


Diagram 13

Substance Q has the following properties  
*Bahan Q mempunyai ciri-ciri berikut*

- strong  
*kuat*
- light  
*ringan*



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- durable  
*tahan lasak*
- withstand high temperature  
*tahan haba tinggi*

Which of the following is substance Q?

*Antara yang berikut, manakah bahan Q?*

- A** Ceramic  
*Seramik*
- B** Concrete  
*Konkrit*
- C** Plastic  
*Plastik*
- D** Composite material  
*Bahan komposit*

**31** State the function of sodium perborate which is added to detergent.  
*Nyatakan fungsi natrium perborat yang ditambah ke dalam detergen.*

- A** To remove protein stains  
*Untuk menanggalkan kotoran protei*
- B** To convert stains into colourless substances  
*Untuk menukar kotoran kepada sebatian tanpa warna*
- C** To enable the detergent to be poured easily  
*Untuk membolehkan detergen mudah dituangkan*
- D** To control foaming in detergent  
*Untuk mengawal pembentukan buih*

**32** Diagram 14 shows the symbol of sodium atom. The nucleus of this atom contains  
*Rajah 14 menunjukkan simbol bagi atom natrium. Nukleus atom ini mengandungi*

|    |
|----|
| 23 |
| Na |
| 11 |

Diagram 14

- A** 11 proton and 12 neutron  
*11 proton dan 12 neutron*



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- B** 11 proton and 23 neutron  
*11 proton dan 23 neutron*
- C** 11 neutron and 11 electron  
*11 neutron dan 11 elektron*
- D** 23 neutron and 11 electron  
*23 neutron dan 11 elektron*
- 33** The molecule of a compound consists of one carbon atom and four chlorine atoms. What is the name of this compound?  
*Molekul satu sebatian mengandungi satu atom karbon dan empat atom klorin.*  
*Apakah nama sebatian ini ?*
- A** Carbon dioxide  
*Karbon dioksida*
- B** Carbon dichloride  
*Karbon diklorida*
- C** Carbon trifluoride  
*Karbon trifluorida*
- D** Carbon tetrachloride  
*Karbon tetraklorida*
- 34** Phosphorus is placed in Group 15 in the periodic table of elements.  
*Which of the following element has the same chemical properties as phosphorus?*  
*Fosforus berada di dalam Kumpulan 15 jadual berkala unsur.*  
*Antara unsur berikut yang manakah mempunyai sifat kimia yang sama dengan fosforus?*
- A** Sulphur which has electron arrangement of 2.8.6  
*Sulfur yang mempunyai susunan electron 2.8.6*
- B** Nitrogen which has the proton number of 7  
*Nitrogen yang mempunyai nombor proton 7*
- C** Boron which has the electron arrangement of 2.3  
*Boron yang mempunyai susunan elektron 2.3*
- D** Fluorine which has proton number of 9  
*Flourin yang mempunyai nombor proton 9*
- 35** Table 1 shows the electron arrangement of atoms P, Q, R and S.  
*Jadual 1 menunjukkan susunan elektron bagi atom-atom P, Q, R dan S.*

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| Atom<br><i>Atom</i> | Electron arrangement<br><i>Susunan elektron</i> |
|---------------------|---|
| P                   | 2.4   |
| Q                   | 2.8.1   |
| R                   | 2.8.2   |
| S                   | 2.8.7   |

Table 1

Which pair of atoms from a compound by sharing of electrons?  
*Pasangan atom yang manakah membentuk sebatian melalui perkongsian elektron?*

- A** P dan Q
  - B** R dan S
  - C** P dan S
  - D** Q dan R
- 36** Diagram 15 shows the set-up of the apparatus of an electrolytic cell.  
*Rajah 15 menunjukkan susunan radas bagi satu sel elektrolisis.*

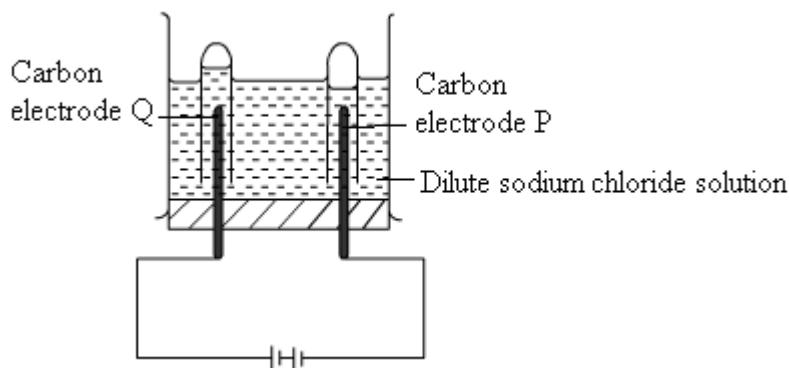


Diagram 15

Hydrogen gas is produced at electrode P.

Which of the following half-equation represents the reaction that occurred at electrode P?

*Gas hidrogen dihasilkan dekat elektrod P.*

*Antara persamaan setengah berikut, yang manakah mewakili tindak balas yang berlaku di elektrod P?*

- A**  $H^+ + e \longrightarrow H_2$
- B**  $2H^+ + 2e \longrightarrow H_2$
- C**  $2H^+ \longrightarrow H_2 + 2e$
- D**  $4H^+ \longrightarrow 2H_2 + 4e$

**37** Which characteristics of sodium hydroxide enable it to show pH 14 in water?

*Yang manakah ciri natrium hidroksida membolehkannya menunjukkan pH 14 dalam air?*

**A** Dissolves in water

*Larut dalam air*

**B** Contains hydrogen ions

*Mengandungi ion hidrogen*

**C** Contains hydroxide ions

*Mengandungi ion hidroksida*

**D** Ionises in water to form hydroxide ions

*Mengion dalam air untuk membentuk ion-ion hidroksida.*

**38** Diagram 16 shows a factory which produces sulphuric acid.

Gas X released from factory causes air pollution.

*Rajah 16 menunjukkan sebuah kilang yang menghasilkan asid sulfurik.*

*Gas X yang terbebas daripada kilang ini menyebabkan pencemaran udara.*



Diagram 16

Which of the following is X?

*Antara gas berikut yang manakah X?*

**A** Sulphur dioxide

*Sulfur dioksida*

**B** Carbon monoxide

*Karbon monoksida*

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- C Nitrogen dioxide  
*Nitrogen dioksida*
- D Chloroflourocarbon  
*Kloroflorokarbon*

- 39** Diagram 17 shows the energy profile diagram for the following reaction:  
*Rajah 17 menunjukkan gambar rajah aras tenaga bagi tindak balas berikut:*

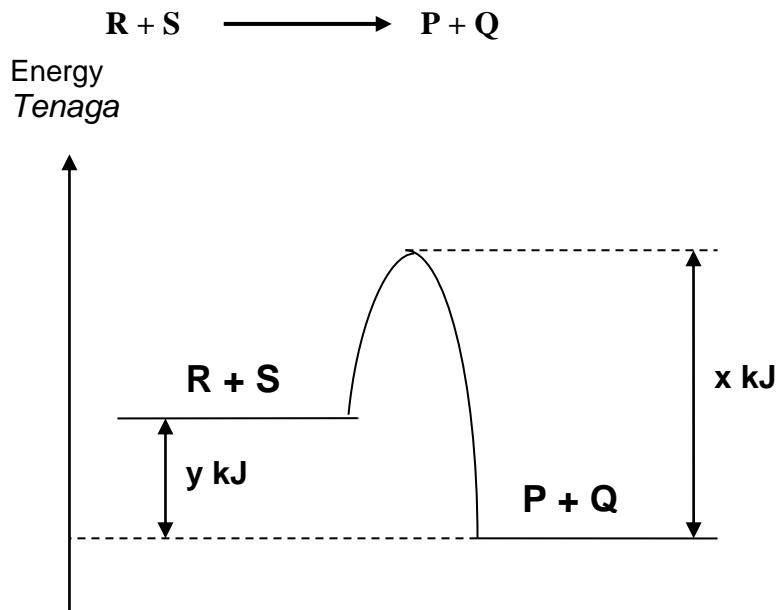


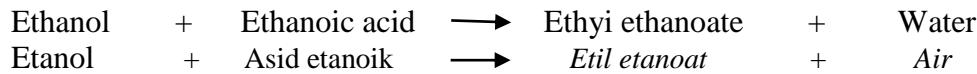
Diagram 17

What is the activation energy for this reaction?  
*Apakah tenaga pengaktifan bagi tindak balas ini?*

- A  $y \text{ kJ}$
  - B  $x \text{ kJ}$
  - C  $(y - x) \text{ kJ}$
  - D  $(x - y) \text{ kJ}$
- 40** The following equation shows a chemical reaction.  
*Persamaan berikut menunjukkan satu tindak balas kimia.*

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What type of reaction is this?

*Apakah jenis tindak balas ini?*

- A** Esterification  
*Pengesteran*
- B** Saponification  
*Saponifikasi*
- C** Neutralization  
*Peneutralan*
- D** Fermentation  
*Penapaian*

- 41** Diagram 18 shows the apparatus set-up for the redox reaction between hydrochloric acid and a metal X. Bubbles of gas are produced.  
*Rajah 18 menunjukkan susunan radas bagi tindak balas redok antara asid hidroklorik dengan logam X. Gelembung gas dihasilkan.*

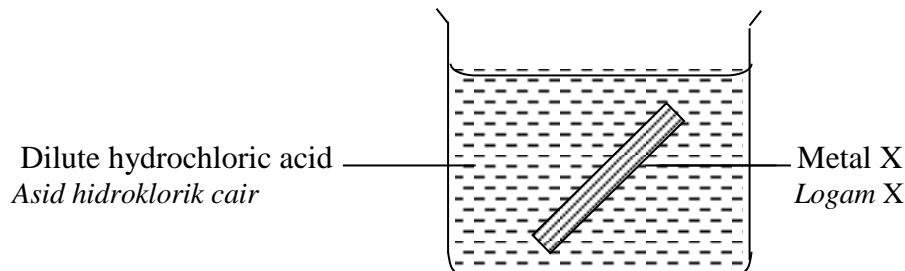


Diagram 18

Which of the following is not metal X?  
*Antara berikut, yang manakah bukan logam X?*

- A** Magnesium  
*Magnesium*
- B** Copper  
*Kuprum*
- C** Lead  
*Plumbum*
- D** Zinc  
*Zink*

- 42** 25 cm<sup>3</sup> of 1.0 moldm<sup>-3</sup> potassium hydroxide solution is reacted with 25 cm<sup>3</sup> of 1.0 moldm<sup>-3</sup> hydrochloric acid solution.



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25 cm<sup>3</sup> larutan kalium hidroksida, 1.0 mol dm<sup>-3</sup> ditindakbalaskan dengan 25 cm<sup>3</sup> larutan asid hidroklorik, 1.0 mol dm<sup>-3</sup>

|  |   |         |
|--|---|---------|
| Average initial temperature reading<br><i>Purata suhu awal</i> | = | 30.0 °C |
|--|---|---------|

|   |   |         |
|---|---|---------|
| Highest temperature reading<br><i>Suhu tertinggi campuran</i> | = | 36.5 °C |
|---|---|---------|

What is the heat of neutralization?

*Berapakah haba peneutralan yang terhasil ?*

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

- A - 27.3 kJ mol<sup>-1</sup>
- B +27.3 kJ mol<sup>-1</sup>
- C - 54.6 kJ mol<sup>-1</sup>
- D +54.6 kJ mol<sup>-1</sup>

- 43** The following equation shows a chemical reaction.  
*Persamaan berikut menunjukkan satu tindak balas kimia.*



1.3 g of zinc reacts with excess sulphuric acid.

What is the volume of hydrogen gas formed at stp

*1.3g zink bertindakbalas dengan asid sulfurik berlebihan.*

*Hitungkan isipadu gas hidrogen yang terbentuk pada s.t.p*

[Relative atomic mass: Zn= 65, 1 mole of gas occupies a volume of 22.4 dm<sup>3</sup> at s.t.p.]

- A 24 cm<sup>3</sup>
- B 112 cm<sup>3</sup>
- C 336 cm<sup>3</sup>
- D 448 cm<sup>3</sup>

- 44** Diagram 14 shows the setup of apparatus for a voltaic cell  
*Rajah 14 menunjukkan susunan radas sebuah sel voltan*

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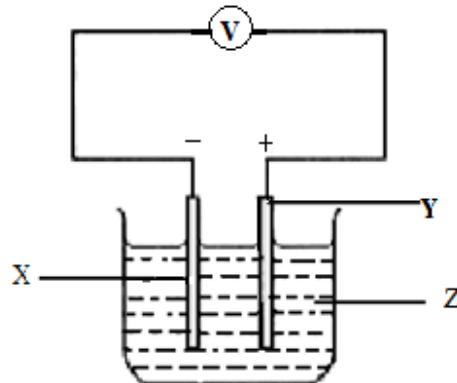


Diagram 14

Which of the following sets of material would cause the electric current to flow?

*Antara yang berikut, manakah set bahan yang menyebabkan arus elektrik mengalir?*

|   | X                         | Y                             | Z  |
|---|---------------------------|-------------------------------|--|
| A | Iron<br><i>Besi</i>       | Copper<br><i>Kuprum</i>       | Copper(II) sulphate solution<br><i>Larutan kuprum(II) sulfat</i> |
| B | Silver<br><i>Argentum</i> | Magnesium<br><i>Magnesium</i> | Dilute hydrochloric acid<br><i>Asid cair hidroklorik</i>         |
| C | Iron<br><i>Besi</i>       | Zinc<br><i>Zinc</i>           | Zinc chloride solution<br><i>Larutan zink klorida</i>            |
| D | Silver<br><i>Argentum</i> | Zinc<br><i>Zinc</i>           | Silver nitrate solution<br><i>Larutan argentum nitrat</i>        |

- 45 Diagram 15 shows the steps involved in the preparation of a standard solution by dilution method.

*Rajah 15 , menunjukkan langkah-langkah dalam penyediaan larutan piawai menggunakan kaedah pencairan.*

1. Calculate the volume of the stock solution required.
  2. Pour the stock solution into a container.
  3. Add distilled water to the stock solution until it reaches the required volume.
  4. Shake the solution.
1. *Kirakan isipadu larutan stok yang diperlukan.*
  2. *Tuangkan larutan stok ke dalam bekas.*
  3. *Tambahkan air suling kepada larutan stok sehingga ia mencapai kepada isipadu yang dikehendaki.*
  4. *Goncangkan larutan itu.*



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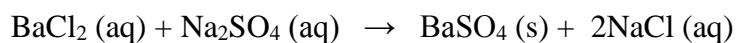
**Diagram 15**

Based on the information given, list the apparatus required to prepare the standard solution.

*Berdasarkan maklumat di atas, senaraikan radas yang diperlukan untuk menyediakan larutan piawai*

- I Beaker  
*Bikar*
  - II Pipette and pipette filler  
*Pipet dan pam pipet*
  - III Volumetric flask and stopper  
*Kelalang volumetrik dan gabus*
  - IV Dropper  
*Penitis*
- A I, III and IV
  - B II, III and IV
  - C II and III
  - D I, II, III and IV

- 46** The following equation shows a double decomposition reaction.  
*Persamaan berikut menunjukkan tindak balas penguraian ganda dua.*

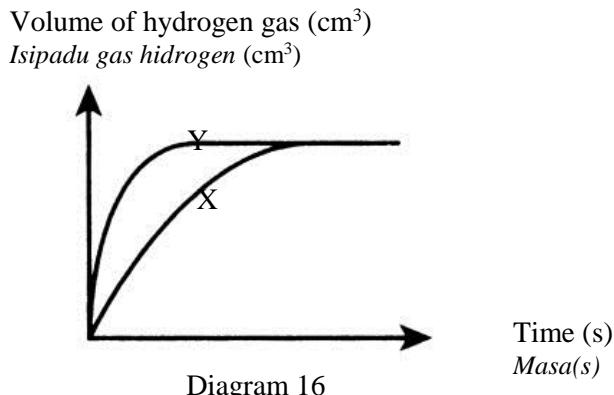


The ionic equation for this reaction is  
*Persamaan ion untuk tindak balas ini adalah*

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- A  $\text{Ba}^{2+} + \text{SO}_4^{2-} \rightarrow \text{BaSO}_4$
- B  $2\text{Ba}^{2+} + \text{SO}_4^{2-} \rightarrow \text{Ba}_2\text{SO}_4$
- C  $\text{Na}^+ + \text{SO}_3^{-2} \rightarrow \text{NaSO}_4$
- D  $2\text{Na}^+ + \text{SO}_4^{-2} \rightarrow 2\text{NaSO}_4$
- 47 Diagram 16 shows curve X which obtained when 4 g of granulated zinc (in excess) is reacted with  $50 \text{ cm}^3$  of  $1.0 \text{ mol dm}^{-3}$  hydrochloric acid.  
*Rajah 16 menunjukkan lengkung X yang diperolehi apabila 4g ketulan zink (berlebihan) bertindak balas dengan  $50 \text{ cm}^3$  asid hidroklorik  $1.0 \text{ mol dm}^{-3}$*



Which of the following reactions produces curve Y?  
*Antara tindak balas berikut yang manakah menghasilkan lengkung Y?*

- A 4 g zinc powder +  $50 \text{ cm}^3$  of  $2 \text{ mol dm}^{-3}$  hydrochloric acid  
*4 g serbuk zink +  $50 \text{ cm}^3$  of  $2 \text{ mol dm}^{-3}$  hidroklorik asid*
- B 4 g zinc powder +  $50 \text{ cm}^3$  of  $1 \text{ mol dm}^{-3}$  of hydrochloric acid  
*4 g serbuk zink +  $50 \text{ cm}^3$  of  $1 \text{ mol dm}^{-3}$  hidroklorik asid*
- C 4 g granulated zinc +  $100 \text{ cm}^3$  of  $1 \text{ mol dm}^{-3}$  of hydrochloric acid  
*4 g ketulan zink +  $100 \text{ cm}^3$  of  $1 \text{ mol dm}^{-3}$  hidroklorik asid*
- D 4 g granulated zinc +  $50 \text{ cm}^3$  of  $2 \text{ mol dm}^{-3}$  of hydrochloric acid  
*4 g ketulan zink +  $50 \text{ cm}^3$  of  $2 \text{ mol dm}^{-3}$  hidroklorik asid*

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- 48** Diagram 17 shows a series of reactions.  
*Rajah 17 menunjukkan satu siri tindak balas.*

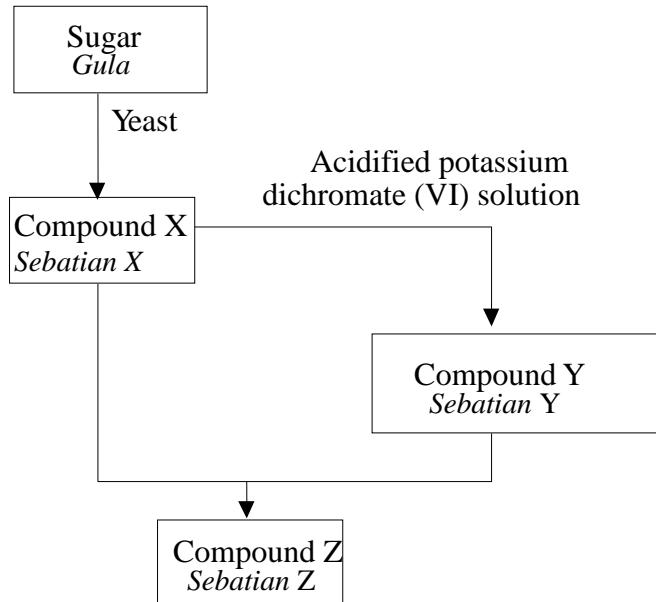


Diagram 17

What is compound Z?  
*Apakah sebatian Z?*

- A** Ethanol  
*Etanol*
- B** Propanoic acid  
*Asid propanoik*
- C** Propyl ethanoate  
*Propil etanoat*
- D** Ethyl ethanoate  
*Etil etanoat*

- 49** Diagram 18 shows the set-up of apparatus to study redox reaction. Magnesium and iron are dipped in agar solution with potassium hexacyanoferate (III). Which of the following statements is true for the reaction?

*Rajah 18 menunjukkan susunan radas bagi mengkaji tindak balas redoks. Magnesium dan besi direndam dalam larutan agar-agar dengan kalium heksasianoferat(III). Antara pernyataan berikut, yang manakah benar mengenai tindak balas itu?*

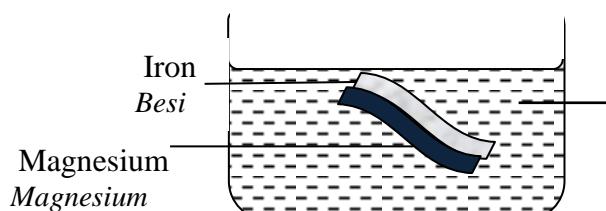


Diagram 11

agar solution with potassium hexacyanoferate (III).  
larutan agar-agar dengan kalium heksasianoferat (III)

- A** Iron is reduced  
*Ferum diturunkan*
  - B** Iron is an oxidising agent  
*Ferum adalah agen pengoksidaan*
  - C** Magnesium releases electron  
*Magnesium membebaskan elektron*
  - D** The oxidation number of magnesium decreases  
*Nombor pengoksidaan magnesium berkurang*
- 50** The heat of combustion of 1 mole of ethanol is  $-1371 \text{ kJ mol}^{-1}$ . The chemical reaction is given in the equation below.  
*Haba pembakaran bagi 1 mol etanol adalah  $-1371 \text{ kJ mol}^{-1}$ . Tindak balas kimia ditunjukkan seperti persamaan di bawah.*



If 0.1 mol of ethanol is burnt in excess oxygen, how much heat is released?  
*Jika 0.1 mol etanol dibakar dalam oksigen berlebihan, berapakah tenaga haba yang dibebaskan?*

- A** 1.371 kJ
- B** 13.71 kJ



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C 137.1 kJ

D 13710 kJ

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