

NO. KAD PENGENALAN

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ANGKA GILIRAN

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**SOALAN PRAKTIS BESTARI  
PROJEK JAWAB UNTUK JAYA (JUU) 2018**



**SIJIL PELAJARAN MALAYSIA**

**4541/1****CHEMISTRY SET 1****Paper 1****4541/1**

1 ¼ jam

Satu jam lima belas minit

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**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Kertas soalan ini adalah dalam dwibahasa*
2. *Soalan dalam Bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman depan kertas soalan ini.*

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Kertas soalan ini mengandungi 25 halaman bercetak

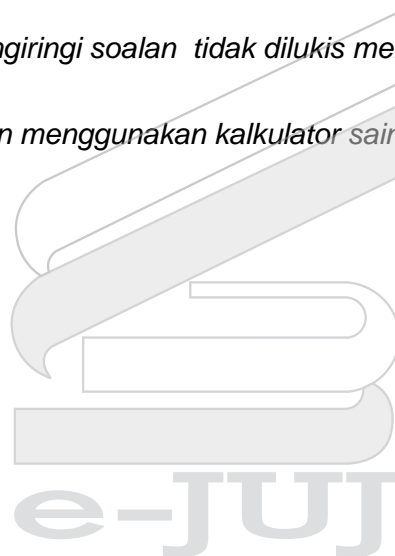
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**INFORMATION FOR CANDIDATES**

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 menukar 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 diprogram.*



- 1 What would happen when water change to steam?  
*Apakah yang berlaku apabila air bertukar kepada stim ?*
- A. Mass of particle reduce  
*Jisim zarah berkurangan*
  - B. Size of particle become smaller  
*Saiz zarah menjadi lebih kecil*
  - C. The force of attraction between particles become weaker  
*Daya tarikan antara zarah semakin lemah*
  - D. The particle release heat  
*Zarah membebaskan haba*
- 2 Which inter-conversion involves the releasing of energy?  
*Perubahan keadaan manakah yang melibatkan pembebasan tenaga?*
- A. Ice → Steam  
*Ais → Stim*
  - B. Steam → Water  
*Stim → Air*
  - C. Ice → Water  
*Ais → Air*
  - D. Water → Steam  
*Air → Stim*
- 3 Which scientist introduce the movement of electron in a shell of an atom?  
*Siapakah saintis yang memperkenalkan pergerakan elektrondi dalam petala dalam sesuatu atom ?*
- A. Neils Bohr
  - B. John Dalton
  - C. James Chadwick
  - D. Ernest Rutherford
- 4 What is the meaning of empirical formula?  
*Apakah maksud formula empirik ?*
- A. Chemical formula that shows actual number of atom of each element in a compound.  
*Formula kimia yang menunjukkan jumlah sebenar atom setiap unsur dalam suatu sebatian.*
  - B. Chemical formula that shows the simplest ratio of atom of each element in a compound.  
*Formula kimia yang menunjukkan nisbah teringkas atom setiap unsur dalam suatu sebatian.*
  - C. Chemical formula that shows the bonding of each atom of element in a compound.  
*Formula kimia yang menunjukkan ikatan setiap atom unsur dalam suatu sebatian.*
  - D. Chemical formula that shows the charge of each atom of element in a compound.  
*Formula kimia yang menunjukkan cas setiap atom unsur dalam suatu sebatian*

- 5 Which is the function of isotopes Cobalt-60?  
*Yang manakah fungsi isotop Kobalt-60?*
- A Estimate the age of fossils  
*Menganggar usia fosil*
  - B Radiotherapy for the treatment of cancer  
*Radioterapi untuk rawatan kanser*
  - C Use in study of metabolism of phosphorus in plants  
*Digunakan untuk mengkaji metabolisme fosforus dalam tumbuhan.*
  - D To detect pipe leaking underground  
*Untuk mengesan kebocoran paip bawah tanah*
- 6 Which characteristic is correct about Group 1 element in the Periodic Table as going down the group?  
*Ciri manakah yang betul tentang unsur-unsur Kumpulan 1 dalam Jadual Berkala Unsur apabila menuruni kumpulan?*
- A. The reactivity decreases  
*Kereaktifan berkurangan*
  - B Melting and boiling point increases  
*Takat lebur dan takat didih meningkat*
  - C The atomic size decreases  
*Saiz atom semakin berkurang*
  - D The tendency to release electron increase  
*Kecenderungan melepaskan elektron meningkat.*
- 7 Which of the following will form when an atom donate electron.  
*Antara berikut yang manakah akan terbentuk apabila satu Atom yang menderma elektron*
- A. An anion  
*Anion*
  - B A cation  
*Kation*
  - C An ionic bond  
*Ikatan ion*
  - D A covalent bond  
*Ikatan kovalen*



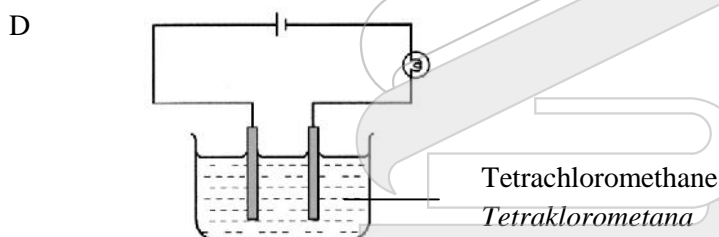
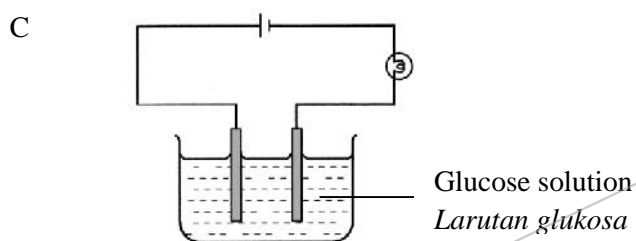
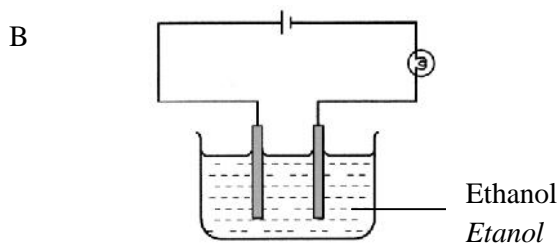
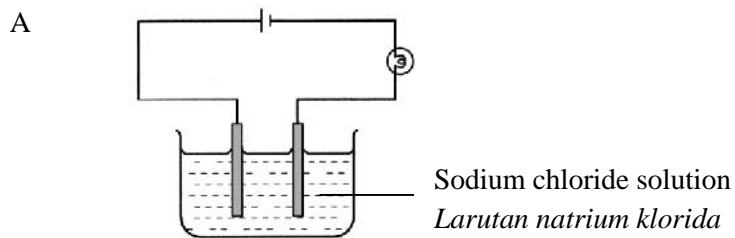
8 Which of the following is **not** the characteristic of an ionic compound?.

*Yang mana satu daripada berikut **bukan** ciri suatu sebatian ion?*

- A. Soluble in water  
*Larut dalam air*
- B. Can be use as electrolyte  
*Boleh digunakan sebagai elektrolit*
- C. insoluble in organic solvent  
*Tidak larut dalam pelarut organik*
- D. Have low melting and boiling point  
*Mempunyai takat lebur dan didih yang rendah*

9 The following electrolytic cells used carbon as electrodes. Which of the cells will light up the bulb?

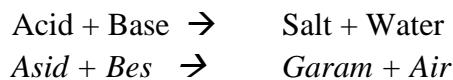
*Sel elektrolisis berikut menggunakan karbon sebagai elektrod. Sel yang manakah akan menyebabkan mentol menyala?*



10 Which of the following show the characteristic of electrolytic cell?  
*Manakah antara berikut menunjukkan ciri-ciri sel elektrolisis?*

- A. Does not contain electrolyte  
*Tidak mengandungi elektrolit*
- B. Convert chemical energy to electrical energy  
*Menukarkan tenaga kimia kepada tenaga elektrik*
- C. Electron flow from negative terminal to positive terminal  
*Elektron mengalir dari terminal negatif ke terminal positif*
- D. Electron flow from positive terminal to negative terminal  
*Elektron mengalir dari terminal positif ke terminal negatif*

11 The following equation represents a neutralization reactions  
*Persamaan berikut mewakili suatu tindakbalas peneutralan.*



Which pairs are reactants in neutralization reactions?

*Pasangan manakah adalah bahan tindakbalas dalam tindak balas peneutralan?*

- I. Sulphuric acid + Sodium Hydroxide  
*sulfuric + Natrium hidroksida*
  - II. Hydrochloric acid + Solid copper(II) oxide  
*Asid hidroklorik + pepejal kuprum(II) oksida*
  - III. Sulphuric acid + Calcium carbonate  
*Asid sulfuric + Kalsium karbonat*
  - IV. Hydrochloric acid + Potassium carbonate  
*Asid hidroklorik + Kalium karbonat*
- A. I and II only  
*I dan II sahaja*
  - B. I and IV only  
*I dan IV sahaja*
  - C. II and III only  
*II dan III sahaja*
  - D. III and IV only  
*III dan IV sahaja*

12 Which of the characteristic is true about a weak acid?  
*Antara sifat berikut yang manakah benar tentang asid lemah?*

- A. Unable to neutralise an alkali  
*Tidak boleh meneutralkan alkali*
- B. The PH value more than 7  
*Nilai PH melebihi 7*
- C. Able to change red litmus paper to blue  
*Menukarkan kertas litmus merah ke biru*
- D. Ionise partially in water to produce hydrogen ions  
*Mengion separa dalam air untuk menghasilkan ion hidrogen*

13 What is the meaning of molarity?

*Apakah maksud kemolaran?*

- A. Number of moles of solute that are present in  $1.0 \text{ cm}^3$  of solution  
*Bilangan mol bahan terlarut yang hadir dalam  $1.0 \text{ cm}^3$  larutan*
- B. Quantity of solute in a given volume of solution.  
*Kuantiti bahan terlarut dalam isipadu larutan*
- C. Mass of solute in gram per volume of solution.  
*Jisim bahan terlarut dalam gram per isipadu larutan*
- D. Number of moles of solute that are present in  $1.0 \text{ dm}^3$  of solution.  
*Bilangan mol bahan terlarut yang hadir dalam  $1.0 \text{ dm}^3$  larutan*

14 A substance has the following properties:

*Suatu bahan mempunyai ciri-ciri berikut:*

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

Which of following substances has the above properties?

*Antara bahan-bahan berikut yang manakah mempunyai ciri-ciri seperti di atas?*

- A. Ceramics  
*Seramik*
- B. Glass  
*kaca*
- C. Metal  
*Logam*
- D. Polymers  
*Polymer*



- 15 Diagram 1 shows the structure of a material  
*Rajah 1 menunjukkan struktur sesuatu bahan*

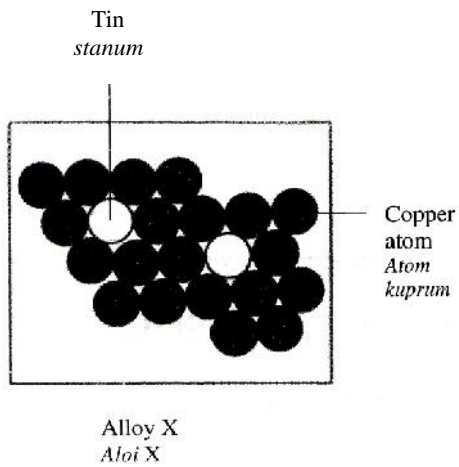


Diagram 1  
*Rajah 1*

**Diagram 1**  
***Rajah 1***

The material shown in Diagram 1 is  
*Bahan yang ditunjuk dalam Rajah 1 ialah*

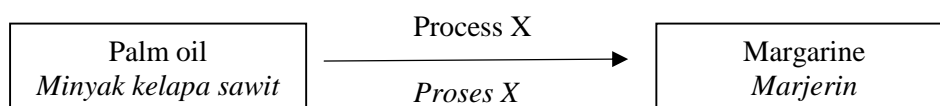
- A. Bronze  
*Gangsa*
- B. Brass  
*loyang*
- C. Pewter  
*Pewter*
- D. Duralumin  
*Duralumin*
- 16 Which process has the highest rate of reaction?  
*Proses manakah yang mempunyai kadar tindakbalas yang paling tinggi?*

- A. Photosynthesis  
*Fotosintesis*
- B. Combustion  
*Pembakaran*
- C. Respiration  
*Respirasi*
- D. Rusting  
*Pengaratan*





- 17 How does a catalyst increase the rate of reaction?  
*Bagaimanakah mungkin meningkatkan kadar tindakbalas?*
- A. Increase the number of effective collisions  
*Meningkatkan bilangan perlanggaran berkesan*
  - B. Increase the activation energy of the reaction  
*Meningkatkan tenaga pengaktifan tindakbalas*
  - C. Increase the total number of reactant particles  
*Meningkatkan jumlah bilangan zarah-zarah bahan tindakbalas*
  - D. Increase the kinetic energy of reactant particles  
*Meningkatkan tenaga kinetik zarah-zarah bahan tindakbalas*
- 18 The reaction between strong acid and strong alkali will produce highest heat of neutralisation. Which pair produce the highest heat of neutralisation?  
*Tindakbalas antara asid kuat dan alkali kuat menghasilkan haba peneutralan yang paling tinggi. Pasangan manakah yang menghasilkan haba peneutralan paling tinggi?*
- A. Methanoic acid and sodium hydroxide solution  
*Asid metanoik dan larutan natrium hidroksida*
  - B. Sulphuric acid and potassium hydroxide  
*Asid sulfurik dan kalium hidroksida*
  - C. Hydrochloric acid and calcium hydroxide  
*Asid hidroklorik dan kalsium hidroksida*
  - D. Ethanoic acid and sodium hydroxide  
*Asid etanoik dan natrium hidroksida*
- 19 Diagram 2 shows a process of preparing margarine from palm oil through process X.  
*Rajah 2 menunjukkan proses menyediakan marjerin daripada minyak kelapa sawit melalui proses X.*



**Diagram 2**  
**Rajah 2**

What is process X?  
*Apakah proses X?*

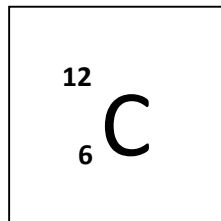
- A. Halogenation  
*Penghalogenan*
- B. Hydrogenation  
*Penghidrogenan*
- C. Saponification  
*Saponifikasi*
- D. Oxidation  
*Pengoksidaan*



- 20 Paracetamol is a medicine that been use to relief the headache.  
*Parasetamol ialah ubat yang digunakan untuk melegakan sakit kepala.*

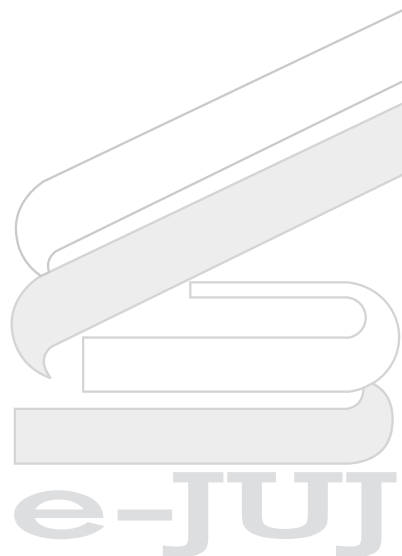
Paracetamol is a type of  
*Parasetamol ialah sejenis*

- A. Antibiotic  
*Antibiotik*
  - B. Analgesic  
*Analgesik*
  - C. Antidepressant  
*Antidepresan*
  - D. Stimulant  
*Stimulan*
- 21 The standard representation for carbon atom can be written as,  
*Perwakilan piawai bagi atom karbon boleh ditulis sebagai,*



What is the number of valence electron for carbon atom?  
*Apakah bilangan elektron valens bagi atom karbon?*

- A. 2
- B. 4
- C. 6
- D. 12



- 22 Table 1 shows the relative atomic mass of three elements  
*Jadual 1 menunjukkan jisim atom relatif bagi tiga unsur*

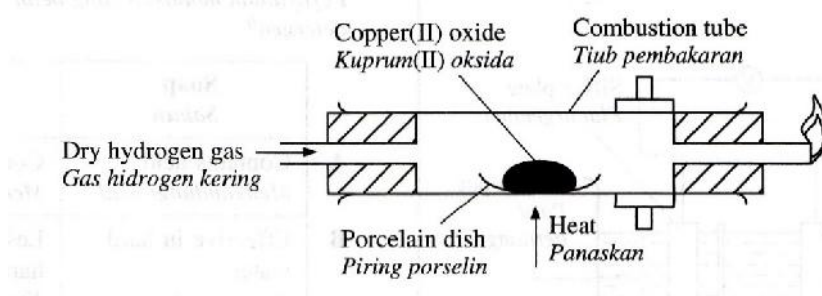
Element <i>Unsur</i>	X	Y	Z
Relative atomic mass <i>Jisim atom relatif</i>	8	12	24

**Table 1 /Jadual 1**

Which of the following statements is true?

*Pernyataan manakah benar?*

- A Mass of 1 mol of atom X is 8 kg  
*Jisim 1 mol atom X ialah 8 kg*
- B The molar mass of Z is 24g/mol  
*Jisim molar Z ialah 24g mol<sup>-1</sup>*
- C 6.0g of Y contains  $3.01 \times 10^{22}$  atoms  
*6.0 g Y mengandungi  $3.01 \times 10^{22}$  atom*
- D One atom Z weighs 24 times more than one atom X  
*Satu atom Z mempunyai berat 24 kali ganda dari satu atom X*
- 23 Diagram 3 shows the apparatus set-up to determine the empirical formula of copper (II) oxide.  
*Rajah 3 menunjukkan susunan radas bagi menentukan formula empirik bagi kuprum (II) oksida.*



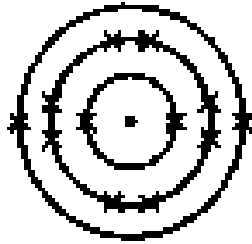
**Diagram 3 /Rajah 3**

The dry hydrogen gas must be continuing flow through the apparatus for several minutes after the reaction is complete. What is the reason for this action to be taken?

*Gas hidrogen kering mesti dialirkan berterusan selama beberapa minit selepas selesai tindakbalas lengkap berlaku. Apakah sebab tindakan ini diambil?*

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

- 24 Diagram 4 shows the electron arrangement of an atom M  
Rajah 4 menunjukkan susunan elektron bagi atom M



Atom M

Diagram 4 / Rajah 4

Which of the following is the position of element M in the Periodic Table?  
Antara yang berikut, yang manakah kedudukan unsur M dalam Jadual Berkala?

	<u>Group</u> <u>Kumpulan</u>	<u>Period</u> <u>Kala</u>
A	2	2
B	2	3
C	12	2
D	12	3

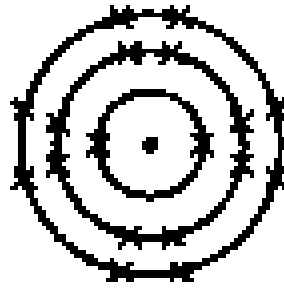
- 25 Diagram 5 shows part of the Periodic Table.  
Rajah 5 menunjukkan sebahagian Jadual berkala Unsur

Diagram 5 / Rajah 5

Arrange the elements above in the order of increasing of atomic size  
Susunkan unsur di atas mengikut urutan menaik berdasarkan kepada pertambahan saiz atom

- A Q,R,T,X,Y  
B Y,X,T,R,Q  
C T,X,Q,Y,R  
D R,Q,Y,X,T

- 26 Diagram 6 shows the electron arrangement of atom X  
Rajah 6 menunjukkan susunan elektron bagi atom X



Atom X

Diagram 6 / Rajah 6

Which of the following has the same electron arrangement as atom X?

Manakah antara berikut mempunyai susunan elektron yang sama dengan atom X?

[Proton number : He,2 ; Na,11 ; Mg,12 ; Cl,17 / Nombor proton : He,2 ; Na,11 ; Mg,12 ; Cl,17 ]

- A. He  
B. Mg  
C. Na<sup>+</sup>  
D. Cl<sup>-</sup>
- 27 Diagram 7 shows the set-up of the apparatus to study the electroplating of an iron spoon using electrolysis method.  
Rajah 7 menunjukkan satu set radas untuk mengkaji penyaduran sudu besi menggunakan kaedah elektrolisis.

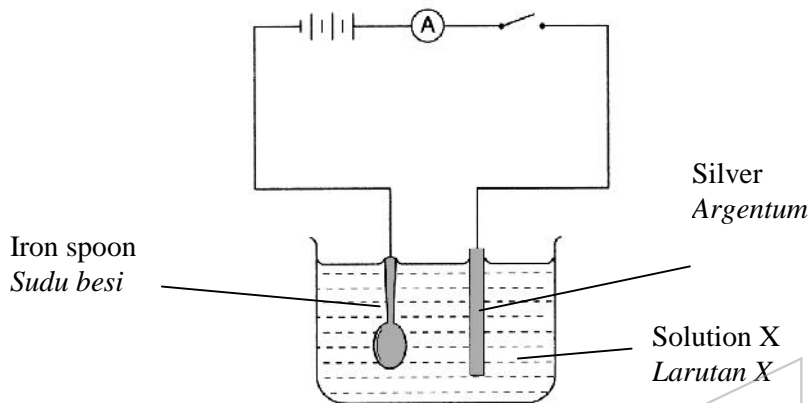


Diagram 7 / Rajah 7

Which of the following is suitable as solution X?

Yang manakah antara berikut sesuai sebagai larutan X?

- A Hydrochloric acid  
Asid hidroklorik
- B Sodium chloride solution  
Larutan Natrium klorida
- C Silver nitrate solution  
Larutan argentum nitrat
- D Copper (II) sulphate solution  
Larutan kuprum (II) sulfat

- 28 Table 2 shows the degree of dissociation of four solutions of alkalis which have the same concentration.

*Jadual 2 menunjukkan darjah penceraian empat larutan alkali yang mempunyai sama kepekatan.*

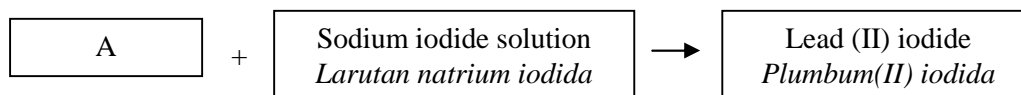
<b>Solution</b> <i>Larutan</i>	<b>Degree of dissociation</b> <i>Darjah penceraian</i>
W	High <i>Tinggi</i>
X	Medium <i>Sederhana</i>
Y	Very high <i>Sangat tinggi</i>
Z	Low <i>Rendah</i>

**Table 2 / Jadual 2**

Which one has the lowest PH value?

*Yang manakah mempunyai nilai PH terendah?*

- A. W  
B. X  
C. Y  
D. Z
- 29 Reaction between a soluble salt A and sodium iodide solution will produce an insoluble Salt, lead(II) iodide.  
*Tindak balas antara garam terlarutkan A dan larutan natrium iodida akan menghasilkan garam tak larut, Plumbum(II) iodida.*



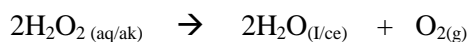
Which of the following substance is A?

*Yang manakah antara berikut adalah A?*

- A Lead (II) nitrate  
*Plumbum (II) nitrat*
- B Lead (II) chloride  
*Plumbum (II) klorida*
- C Lead (II) carbonate  
*Plumbum (II) karbonat*
- D Lead (II) sulphate  
*Plumbum (II) sulfat*



- 30 The equation represents the decomposition of hydrogen peroxide solution.  
*Persamaan di bawah mewakili penguraian larutan hidrogen peroksida*



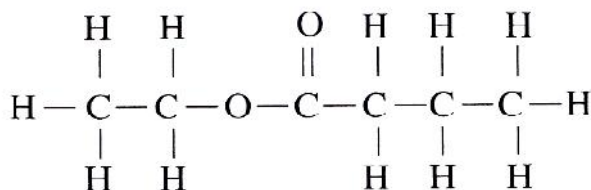
Which of the following can be used to determine the rate of this reaction?

*Antara berikut yang manakah boleh digunakan untuk menentukan kadar tindak balas*

- I. Release of gas per unit time  
*Pembebasan gas per unit masa*
- II. Change of colour intensity per unit time  
*Perubahan keamatan warna per unit masa*
- III. Formation of precipitate per unit time  
*Pembentukan mendakan per unit masa*
- IV. Increase in the mass of reactant per unit time  
*Penambahan jisim bahan tindak balas per unit masa*

- A. I only/*I sahaja*
- B. III and IV only/*III dan IV sahaja*
- C. I,II and III only/*I,II dan III sahaja*
- D. II,III and IV only/*II,III dan IV sahaja*

- 31 Diagram below represent the structural formula of a carbon compound.  
*Rajah dibawah mewakili formula struktur bagi suatu sebatian karbon*



The compound is produced by the reaction between  
*Sebatian ini terhasil daripada tindakbalas antara*

- A. Ethanol and propanoic acid  
*Etanol dan asid propanoik*
- B. Ethanol and butanoic acid  
*Etanol dan asid butanoik*
- C. Propanol dan ethanoic acid  
*Propanol dan asid etanoik*
- D. Butanol and ethanoic acid  
*Butanol dan asid etanoik*

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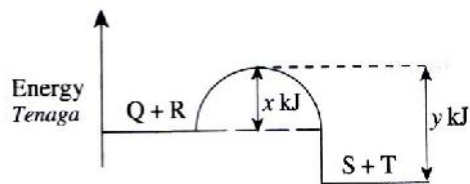
32 Which of the following is not a redox reaction?

*Antara yang berikut, yang manakah bukan tindakbalas redoks*

- A  $2\text{Fe} + 3\text{Cl}_2 \rightarrow 2\text{FeCl}_3$   
 B  $4\text{FeO} + \text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$   
 C  $\text{FeCl}_2 + \text{Mg} \rightarrow \text{MgCl}_2 + \text{Fe}$   
 D  $\text{FeSO}_4 + 2\text{NaOH} \rightarrow \text{Fe}(\text{OH})_2 + \text{Na}_2\text{SO}_4$

33 Diagram below shows the energy profile diagram of a reaction.

*Gambarajah dibawah menunjukkan gambar rajah profil tenaga untuk satu tindakbalas.*



Which of the following is true about the diagram?

*Antara berikut yang manakah benar tentang gambarajah itu?*

- A The reaction is endothermic  
*Tindakbalas adalah endotermik*  
 B The activation energy is y kJ  
*Tenaga pengaktifan ialah y kJ*  
 C The heat of reaction is  $-(y-x)$  kJ  
*Haba tindakbalas ialah  $-(y-x)$  kJ*  
 D y value increase with the presence of a catalyst  
*Nilai y bertambah dengan kehadiran mangkin*





- 34 The following chemical equation shows the reaction of the formation of lead (II) sulphate precipitate

*Persamaan kimia berikut menunjukkan tindakbalas pembentukan mendakan plumbum (II) sulfat.*

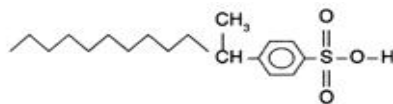


Which of the following is true about the reaction?

*Antara yang berikut yang manakah benar tentang tindakbalas itu?*

	<b>Heat change</b> <i>Perubahan haba</i>	<b>Type of reaction</b> <i>Jenis tindakbalas</i>
A	Heat is released <i>Haba dibebaskan</i>	Endothermic <i>endotermik</i>
B	Heat is absorbed <i>Haba diserap</i>	Exothermic <i>Eksotermik</i>
C	Heat is released <i>Haba dibebaskan</i>	Exothermic <i>Eksotermik</i>
D	Heat is absorbed <i>Haba diserap</i>	Endothermic <i>endotermik</i>

- 35 Diagram 8 shows the structural formula of a substance  
*Rajah 8 menunjukkan formula struktur bagi suatu bahan.*



**Diagram 8 / Rajah 8**

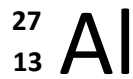
What is the substance?

*Apakah bahan itu*

- A. Soap  
*Sabun*
- B. Detergent  
*Detergen*
- C. Sulphuric acid  
*Asid sulfurik*
- D. Carboxylic acid  
*Asid karboksilik*



- 36 How many protons, neutrons and electrons does an Aluminium atom contain?  
*Berapakah bilangan proton, neutron dan elektron yang dipunyai oleh atom Aluminium?*



- |   | Number of protons<br><i>Bilangan proton</i> | Number of neutrons<br><i>Bilangan neutron</i> | Number of electrons<br><i>Bilangan electron</i> |
|---|---|---|---|
| A | 13  | 27  | 13  |
| B | 13  | 14  | 13  |
| C | 14  | 13  | 13  |
| D | 13  | 27  | 14  |
- 37 One atom of element Z has 17 protons and 20 neutrons in its nucleus. How many valence electron that one atom of element Z has?  
*Satu atom unsur Z mempunyai 17 proton dan 20 neutron pada nukleusnya. Berapakah bilangan elektron valens pada satu atom unsur Z?*
- A 7  
 B 17  
 C 20  
 D 37
- 38 A sample of iron oxide contains 5.6g of iron and 2.4g of oxygen.  
 What is the empirical formula of this compound?  
*Suatu sampel ferum oksida mengandungi 5.6g ferum dan 2.4g oksigen.  
 Apakah formula empirik bagi sebatian ini?*

[Relative atomic mass: O,16 ; Fe,56]

[ Jisim atom relatif: O,16 ; Fe,56]

- A  $\text{Fe}_2\text{O}_3$   
 B  $\text{Fe}_3\text{O}_4$   
 C  $\text{FeO}$   
 D  $\text{FeO}_2$



- 39 Table 3 shows elements M, Q and R in Period 3 of the Periodic Table.  
*Jadual 3 menunjukkan unsur M, Q dan R dalam kala 3 Jadual berkala.*

Elements <i>unsur</i>	Properties of oxide <i>sifat oksida</i>
M	Amphoteric <i>Amfoterik</i>
Q	Base <i>Bes</i>
R	Acidic <i>Asid</i>

**Table 3 / Jadual 3**

Arrange the elements above in the order of their increasing atomic number.  
*Susunkan unsur di atas mengikut urutan menaik berdasarkan kepada pertambahan nombor atom.*

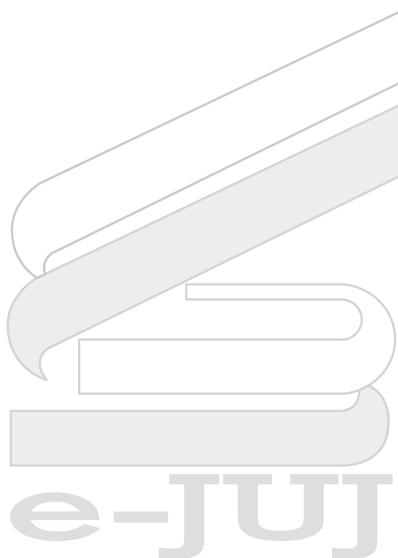
- A R,M,Q  
B M,Q,R  
C Q,M,R  
D R,Q,M
- 40 Table 4 shows the proton number and the nucleon number of atoms of element M and N  
*Jadual 4 menunjukkan nombor proton dan nombor nucleon atom unsur M dan N*

Element <i>Unsur</i>	Proton number <i>Nombor proton</i>	Nucleon number <i>Nombor nukleon</i>
M	13	27
N	8	16

**Table 4 / Jadual 4**

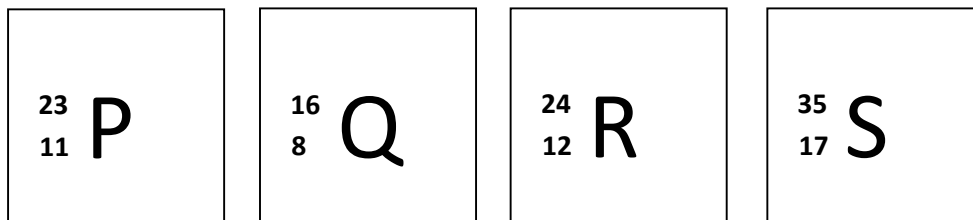
Element M react with element N to form a compound. What is the molar mass of the compound?  
*Unsur M bertindakbalas dengan N membentuk satu sebatian. Apakah jisim molar bagi sebatian.*

- A. 43 g mol<sup>-1</sup>  
B. 50 g mol<sup>-1</sup>  
C. 102 g mol<sup>-1</sup>  
D. 113 g mol<sup>-1</sup>



- 41 Diagram 9 shows the symbols for four different elements P,Q,R,S. The letter are not the actual symbols of the elements.

*Rajah 9 menunjukkan symbol bagi 4 unsur berbeza P,Q,R,S. Huruf tidak mewakili simbol sebenar unsur.*



**Diagram 9 / Rajah 9**

Which is the correct formula and type of bond when two of the elements react?

*Formula dan jenis ikatan manakah yang benar apabila dua daripada unsur-unsur itu bertindakbalas?*

	<b>Molecular formulae</b> <i>Formula molekul</i>	<b>Type of bond</b> <i>Jenis ikatan</i>
A	P <sub>2</sub> Q	Ionic <i>Ion</i>
B	PQ <sub>2</sub>	Covalent <i>Kovalen</i>
C	R <sub>2</sub> S	Ionic <i>Ion</i>
D	RS <sub>2</sub>	Covalent <i>kovalen</i>



- 42 Diagram 10 shows the set-up of the apparatus to study the electroplating of an iron spoon using electrolysis method.

Rajah 10 menunjukkan satu set radas untuk mengkaji penyaduran sudu besi menggunakan kaedah elektrolisis.

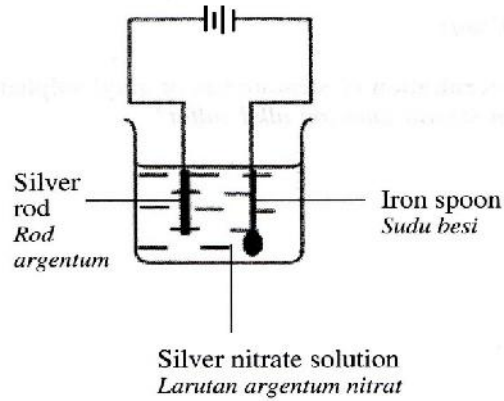


Diagram 10 / Rajah 10

Which of the following half equations represent the reactions that occur at the anode and cathode?  
Yang manakah antara berikut setengan persamaan yang mewakili tindak balas yang berlaku di katod dan di anod.

	Anode <i>Anod</i>	Cathode <i>Katod</i>
<b>A</b>	$4\text{OH}^- \rightarrow 2\text{H}_2\text{O} + \text{O}_2 + 4\text{e}$	$2\text{H}^+ + 2\text{e} \rightarrow \text{H}_2$
<b>B</b>	$4\text{OH}^- \rightarrow 2\text{H}_2\text{O} + \text{O}_2 + 4\text{e}$	$\text{Ag}^+ + \text{e} \rightarrow \text{Ag}$
<b>C</b>	$\text{Ag} \rightarrow \text{Ag}^+ + \text{e}$	$\text{Ag}^+ + \text{e} \rightarrow \text{Ag}$
<b>D</b>	$\text{Ag} \rightarrow \text{Ag}^+ + \text{e}$	$2\text{H}^+ + 2\text{e} \rightarrow \text{H}_2$



- 43 Diagram 11 shows the chemical cell  
*Rajah 11 menunjukkan satu sel kimia*

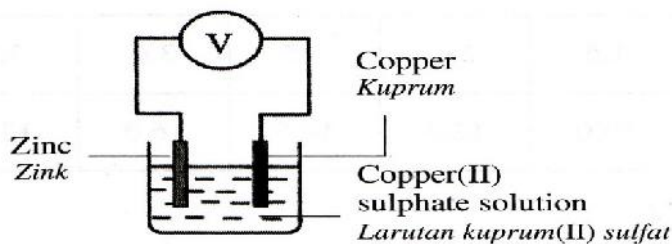


Diagram 11 / Rajah 11

Which of the statement is correct?  
*Pernyataan manakah yang betul.*

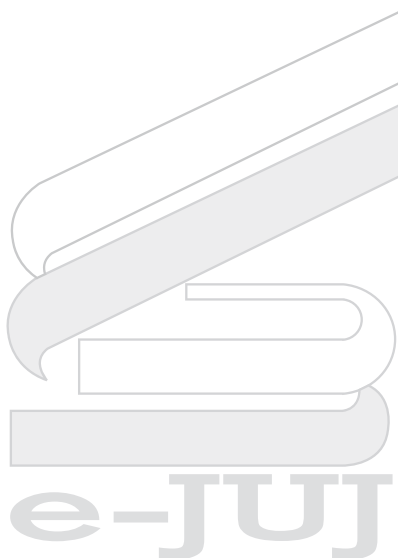
	Negative terminal <i>Terminal negatif</i>	Positive terminal <i>Terminal positif</i>	Observation at anode <i>Pemerhatian di anod</i>
A	Cu	Zn	Zn electrode become thinner <i>Elektrod Zn menipis</i>
B	Cu	Zn	Brown solid deposited <i>Pepejal perang terenap</i>
C	Zn	Cu	Zn electrode become thinner <i>Elektrod Zn menipis</i>
D	Zn	Cu	Brown solid deposited <i>Pepejal perang terenap</i>

- 44 The molarity of a solution of hydrochloric acid is  $2.0 \text{ mol dm}^{-3}$ . What is the concentration of acid in  $\text{g dm}^{-3}$ ?  
*Kemolaran larutan asid hidroklorik ialah  $2.0 \text{ mol dm}^{-3}$ . Apakah kepekatan asid tersebut dalam  $\text{g dm}^{-3}$ ?*

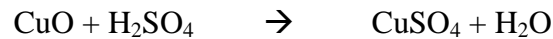
[Relative atomic mass: H,1 ; Cl,35.5]

[Relative atomic mass: H,1 ; Cl,35.5]

- A.  $73 \text{ g dm}^{-3}$   
B.  $36.5 \text{ g dm}^{-3}$   
C.  $75 \text{ g dm}^{-3}$   
D.  $115.5 \text{ g dm}^{-3}$



- 45 The chemical equation below shows the reaction between copper (II) oxide and sulphuric acid.  
*Persamaan kimia dibawah menunjukkan tindakbalas antara kuprum(II)oksida dan asid sulfurik*



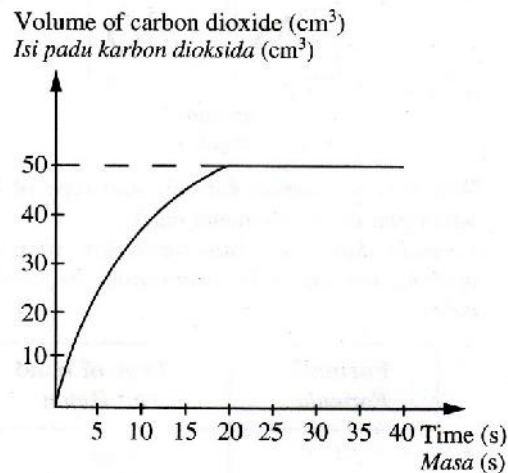
6.0 g copper (II)oxide is added to 50.0 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> sulphuric acid. What is the mass of copper (II)oxide left at the end of reaction?

[Relative atomic mass: O,16 ; Cu,64 ]

*6.0 g kuprum(II)oksida ditambah kepada 50.0 cm<sup>3</sup> asid sulfuric 1.0 mol dm<sup>-3</sup>. Berapakah jisim kuprum(II)oksida tertinggal di akhir tindakbalas?*

*[Jisim atom relatif: O,16 ; Cu,64 ]*

- A 0.3 g  
B 2.0 g  
C 2.8 g  
D 4.0 g
- 46 Graph below shows the volume of carbon dioxide produce in a reaction.  
*Graf dibawah menunjukkan isipadu gas karbon dioksida terhasil dari suatu tindakbalas.*



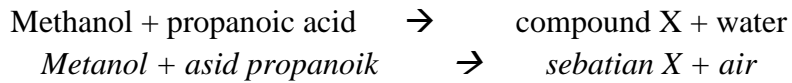
What is the rate of reaction of this reaction?

*Apakah kadar tindakbalas bagi tindakbalas ini?*

- A 2.5 cm<sup>3</sup> s<sup>-1</sup>  
B 1.25 cm<sup>3</sup> s<sup>-1</sup>  
C 0.8 cm<sup>3</sup> s<sup>-1</sup>  
D 0.4 cm<sup>3</sup> s<sup>-1</sup>



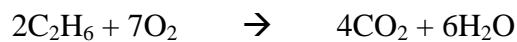
- 47 The following equation shows a chemical reaction.  
*Berikut adalah persamaan menunjukkan tindakbalas kimia.*



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

- A  $\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{O} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$
- B  $\text{CH}_3 - \text{CH}_2 - \overset{\text{O}}{\parallel} \text{C} - \text{O} - \text{CH}_3$
- C  $\text{CH}_3 - \text{CH}_2 - \overset{\text{O}}{\parallel} \text{C} - \text{O} - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$
- D  $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \overset{\text{O}}{\parallel} \text{C} - \text{O} - \text{CH}_2 - \text{CH}_3$

- 48 The combustion of ethane gas produce carbon dioxide and water.  
*Pembakaran gas etana menghasilkan karbon dioksida dan air*



What is the volume of ethane needed to produce 2.2g of carbon dioxide at standard temperature and pressure?

[Molar mass  $\text{CO}_2 = 44\text{g mol}^{-1}$ , molar volume of gas at s.t.p =  $22.4\text{ dm}^3\text{ mol}^{-1}$ ]

*Berapakah isipadu etana yang diperlukan untuk menghasilkan 2.2g karbon dioksida pada suhu dan tekanan piawai.*

*[Jisim molar  $\text{CO}_2 = 44\text{g mol}^{-1}$ , isipadu molar gas pada s.t.p =  $22.4\text{ dm}^3\text{ mol}^{-1}$ ]*

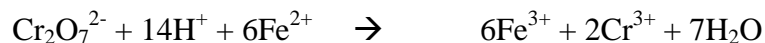
- A  $0.05\text{ dm}^3$   
B  $0.10\text{ dm}^3$   
C  $0.56\text{ dm}^3$   
D  $1.12\text{ dm}^3$





- 49 Ionic equation below represent the reaction between acidified potassium dichromate (VI) solution and iron (II) sulphate solution.

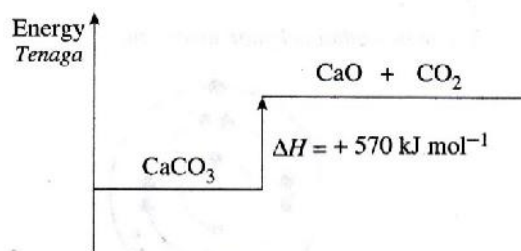
*Persamaan ion dibawah mewakili tindakbalas antara larutan kalium dikromat(VI) dengan larutan ferum(II) sulfat*



What is the change of oxidation number of chromium in the reaction?

*Apakah perubahan nombor pengoksidaan kromium dalam tindakbalas itu?*

- A + 6 to +2  
+ 6 kepada +2
- B + 6 to +3  
+ 6 kepada +3
- C + 7 to +2  
+ 7 kepada +2
- D + 7 to +3  
+ 7 kepada +3
- 50 Diagram 12 shows the energy level for the decomposition of calcium carbonate.  
*Rajah 12 menunjukkan aras tenaga bagi tindakbalas penguraian kalsium karbonat.*



**Diagram 12**  
**Rajah 12**

What is the heat absorb when 35.0 g calcium carbonate is used?

*Berapakah haba yang diserap apabila 35.0 g kalsium karbonat digunakan?*

[Relative atomic mass: Ca,40 ; C,12 ; O,16]

*[Jisim atom relatif : Ca,40 ; C,12 ; O,16]*

- A 199.5 kJ
- B 181.4 kJ
- C 293.4 kJ
- D 570.0 kJ

**END OF QUESTIONS PAPER**  
**KERTAS SOALAN TAMMAT**