

SULIT

4541/1

Chemistry
Kertas 1
Ogos / Sept
2010
1 ¼ jam

Nama Pelajar :

Tingkatan :



JABATAN PELAJARAN KELANTAN
DENGAN KERJASAMA
PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA
SEKOLAH MENENGAH MALAYSIA
CAWANGAN KELANTAN

PEPERIKSAAN PERCUBAAN SPM
TINGKATAN 5 (2010)

CHEMISTRY
KERTAS 1

Masa : Satu Jam Lima Belas Minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

Arahan:

1. Kertas soalan ini adalah dalam dwibahasa
2. Setiap soalan mengandungi kedua-dua bahasa Inggeris dan bahasa Melayu. Bahagian atas dalam bahasa Inggeris dan diikuti di bawahnya oleh bahasa Melayu
3. Calon dikehendaki membaca maklumat di halaman 2.

Kertas soalan ini mengandungi 29 halaman bercetak.

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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 mengirimi 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

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- 1 Which of the following substances undergo sublimation process when heated?
Antara bahan berikut, yang manakah akan mengalami proses pemejalwapan apabila dipanaskan?
 - A Iodine
Iodin
 - B Ethanol
Etanol
 - C Sodium chloride
Natrium klorida
 - D Lead(II) bromide
Plumbum(II) bromida
- 2 One mole of a substance is defined as the quantity of a substance that contains the same number of particles as in W g of element P.
What are W and P?
Satu mol bahan ditakrifkan sebagai kuantiti bahan yang mengandungi bilangan zarah yang sama seperti yang terdapat dalam W g unsur P.
Apakah W dan P?

	W	P
A	2	Hydrogen-1 <i>Hidrogen-1</i>
B	12	Carbon-12 <i>Karbon-12</i>
C	14	Nitrogen-14 <i>Nitrogen-14</i>
D	16	Oxygen-16 <i>Oksigen-16</i>
- 3 Elements are arranged in the modern Periodic Table based on their
Unsur-unsur di susun dalam Jadual Berkala Moden berdasarkan
 - A atomic radius
jejari atom
 - B nucleon number
nombor nukleon
 - C proton number
nombor proton
 - D number of neutrons
bilangan neutron

- 4 Which of the following scientists and their contributions on the atomic theory is true?
Antara berikut, yang manakah benar tentang saintis dan sumbangannya terhadap teori atom?

Scientist Saintis	Theory Teori
A John Dalton	Alpha particle is positively charged Zarah alpha bercas positif
B Joseph John Thomson	Atom is a sphere of positive charge and surrounded by electron Atom ialah sfera bercas positif dan dikelilingi elektron
C Ernest Rutherford	Elements are made up of tiny particles called atom Unsur dibina daripada zarah-zarah halus dikenali sebagai atom
D Neils Bohr	Electrons move in shells around the nucleus Elektron bergerak di dalam petala mengelilingi nukleus

- 5 Solid lead(II) bromide does not conduct electricity because
Pepejal plumbum(II) bromida tidak mengkonduksi elektrik kerana

- A It consists of molecules.
Ia terdiri daripada molekul-molekul
- B It does not contain ion.
Ia tidak mengandungi ion-ion.
- C It contains lead(II) ions and bromide ions that are not free to move.
Ia terdiri daripada ion plumbum(II) dan ion bromida yang tidak bebas bergerak.
- D Lead(II) ions and bromide ions are bonded by strong covalent bonds.
Ion plumbum(II) dan ion bromida terikat oleh ikatan kovalen yang kuat

- 6 Which ions are present in aqueous solution sodium chloride?
Ion manakah yang terdapat dalam larutan akueus natrium klorida?

- A Na^+ , Cl^-
- B H^+ , OH^-
- C Na^+ , Cl^- , OH^-
- D Na^+ , Cl^- , H^+ , OH^-

- 7 Table 1 shows the pH value of four acidic solution which have the same concentration
Jadual 1 menunjukkan nilai pH bagi empat larutan asid yang mempunyai kepekatan yang sama

Solution larutan	pH value Nilai pH
P	1.0
Q	3.0
R	5.0
S	6.0

Table 1
Jadual 1

- Which acidic solution has the highest degree of dissociation?
Larutan asid manakah yang mempunyai darjah penceraian paling tinggi?

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

- 8 Which of the following statements is true about a strong acid?
Antara pernyataan berikut, yang manakah benar tentang suatu asid kuat?

- I Has a high pH value
Mempunyai nilai pH yang tinggi
- II Ionizes completely in water
Mengion dengan lengkap dalam air
- III Has a high concentration of hydrogen ions
Mempunyai kepekatan ion hydrogen yang tinggi
- IV Exist as molecules in water
Wujud sebagai molekul dalam air

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

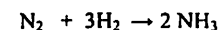
- 9 The following statements show the steps taken in an experiment.
Pernyataan berikut menunjukkan langkah-langkah yang diambil dalam satu eksperimen.

- Lead(II) nitrate solution is mixed with potassium iodide solution
Larutan Plumbum(II) nitrat dicampurkan dengan larutan kalium iodida
- The mixture is filtered
Campuran diturunkan
- The residue in the filter paper is lead(II) iodide
Baki turasan pada kertas turas ialah plumbum(II) iodida

The steps are related to
Langkah-langkah tersebut adalah berkaitan dengan

- A Preparation of soluble salt
Penyediaan garam terlarut
- B Preparation of insoluble salt
Penyediaan garam tak terlarut
- C Purification of soluble salt
Penulenan garam terlarut
- D Purification of insoluble salt
Penulenan garam tak terlarut

- 10 The following equation represents Haber process.
Persamaan berikut mewakili proses Haber.



What are the conditions needed for this process?
Apakah keadaan yang diperlukan oleh proses ini?

	Catalyst Mangkin	Temperature Suhu	Pressure Tekanan
A	Platinum	200° C	1 atm
B	Platinum	200° C	200 atm
C	Iron besi	450 ° C	1 atm
D	Iron besi	450 ° C	200 atm

- 11 The process of producing sulphuric acid involves several stages of reactions.
Which of the following stages involves the usage of vanadium(V) oxide?
Proses menghasilkan asid sulfurik melibatkan beberapa peringkat tindak balas.
Antara peringkat berikut yang manakah melibatkan penggunaan vanadium(V) oksida?
- A $\text{S} + \text{O}_2 \rightarrow \text{SO}_2$
- B $2\text{SO}_2 + \text{O}_2 \rightarrow 2\text{SO}_3$
- C $2\text{SO}_3 + \text{H}_2\text{SO}_4 \rightarrow 2\text{H}_2\text{S}_2\text{O}_7$
- D $\text{H}_2\text{S}_2\text{O}_7 + \text{H}_2\text{O} \rightarrow 2\text{H}_2\text{SO}_4$
- 12 The rate of chemical reaction can be determined by measuring
Kadar tindak balas boleh ditentukan dengan mengukur
- I the volume of gas liberated per unit time.
isipadu gas dibebaskan per unit masa.
- II the formation of precipitate per unit time.
pembentukan mendakan per unit masa.
- III the change of colour per unit time.
perubahan warna per unit masa.
- IV the change of the size of solid per unit time.
perubahan saiz pepejal per unit masa
- A I and III only
I dan III sahaja
- B I, II and III only
I, II dan III sahaja
- C II, III and IV only
II, III dan IV sahaja
- D I, II, III and IV
I, II, III dan IV

- 13 Which of the following is not a characteristic of catalyst?
Antara yang berikut, yang manakah bukan ciri mangkin
- A Catalyst is specific in its reaction
Mangkin adalah khusus dalam tindak balasnya
- B Catalyst influences the quantity of product of reaction
Mangkin mempengaruhi kuantiti hasil tindak balas
- C The chemical property of a catalyst remains unchanged at the end of the reaction
Sifat kimia mangkin tetap tidak berubah di akhir tindak balas
- D Only a little amount of a catalyst is needed to influence the rate of reaction
Hanya sedikit mangkin diperlukan untuk mempengaruhi kadar tindak balas
- 14 Ethene can be differentiate from ethane because ethene can
Etana dapat dibezakan daripada etana kerana etana dapat
- A miscible in water whereas ethane cannot.
terlarut campur dengan air manakala etana tidak
- B burn in air whereas ethane cannot.
terbakar dalam udara manakala etana tidak
- C react with alcohol to produce ester whereas ethane cannot.
bertindak balass dengan ester manakala etana tidak
- D decolourised the brown colour of bromine water at room temperature whereas ethane cannot.
melunturkan warna perang air bromin pada suhu bilik manakala etana tidak

- 15 Test I and Test II was conducted on an organic substance, G. The observation was recorded in Table 2
Ujian I dan Ujian II telah dijalankan ke atas suatu sebatian organik, G. Pemerhatiannya direkodkan dalam Jadual 2.

Test Ujian	Observation Pemerhatian
I Add the oxidation agent then heat up <i>Campurkan agen pengoksidaan dan panaskan</i>	Sour smell liquid is produced <i>Cecair berbau masam terhasil</i>
II Add in carboxylic acid <i>Campurkan asid karboksilik</i>	Sweet smell liquid is produced <i>Cecair berbau wangi terhasil</i>

Table 2
Jadual 2

- Which of the following can represent G?
Antara yang berikut, yang manakah boleh mewakili G ?

- A Ethane
Etana
- B Ethanol
Etanol
- C Ethanoic acid
Asid etanoik
- D Ethyl ethanoate
Etil etanoat

- 16 Diagram 1 shows spoon of metal X dipped in a salt solution of metal Y.
Rajah 1 menunjukkan sudu logam X direndamkan dalam larutan garam logam Y.

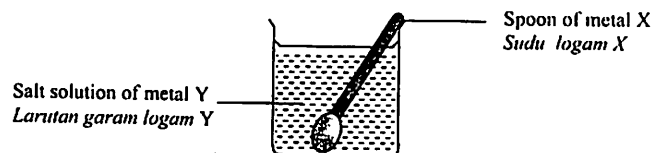


Diagram 1
Rajah 1

If element X is more electropositive than Y, which of the following statements are true?
Jika unsur X lebih elektropositif daripada Y, pernyataan yang manakah betul?

- I Mass of spoon of metal X decreases
Jisim sudu logam X berkurang
- II Metal X undergoes corrosion
Logam X mengalami kakisan
- III Atom of metal X is ionised
Atom logam X mengion
- IV Metal Y is oxidised
Logam Y teroksida
- A I and III only
B I, II and III only
C I, III and IV only
D I, II, III and IV
- 17 Which of the following process is a redox reaction?
Antara proses berikut yang manakah merupakan tindak balas redoks?
- A Hydrogenation
Penghidrogenan
- B Neutralisation
Peneutralan
- C Displacement
Penyesaran
- D Halogenation
Penghalogenan

- 18 Which of the following reactions shows that copper is reduced?
Antara tindakbalas berikut yang manakah menunjukkan kuprum diturunkan?
- A $Mg + CuSO_4 \rightarrow MgSO_4 + Cu$
- B $Cu + 2AgNO_3 \rightarrow Cu(NO_3)_2 + 2Ag$
- C $CuSO_4 \rightarrow Cu^{2+} + SO_4^{2-}$
- D $CuCl_2 + 2AgNO_3 \rightarrow Cu(NO_3)_2 + 2AgCl$

- 19 Which of the following food additives is an antioxidant?
Antara bahan tambah makanan berikut yang manakah adalah pengantioksida?
- A Benzoic acid
Asid benzoik
- B Ascorbic acid
Asid askorbik
- C Sodium nitrate
Natrium nitrat
- D Ethyl ethanoate
Etil etanoat
- 20 Diagram 2 shows the information of two examples of medicine X.
Rajah 2 menunjukkan maklumat dua contoh ubat X.

- | |
|--|
| <ul style="list-style-type: none"> • Penicillin • Streptomycin |
|--|

Diagram 2
Rajah 2

What is medicine X?
Apakah ubat X?

- A Antibiotic
Antibiotik
- B Analgesic
Analgesik
- C Hormone
Hormon
- D Psychotherapeutic medicine
Ubat psikoterapeutik

- 21 Which of the following particles has the same number of electrons with aluminium ion?
Antara zarah berikut, yang manakah mempunyai bilangan elektron yang sama dengan ion aluminium?
 [Proton number : F = 9, Na = 11, Mg = 12, Al = 13, Cl = 17]

- A F
 B Na⁺
 C Mg
 D Cl⁻

- 22 Which of the following statements is true for one mol of substance?
Antara pernyataan berikut, yang manakah benar bagi satu mol bahan?

- A 1 mol of copper contains 6.02×10^{23} molecules
1 mol kuprum mengandungi 6.02×10^{23} molekul
 B 1 mol of oxygen gas contains 6.02×10^{23} atoms
1 mol gas oksigen mengandungi 6.02×10^{23} atom
 C 1 mol of water contains the number of atoms equals to the number of atoms in 12g carbon-12
1 mol air mengandungi bilangan atom yang sama dengan bilangan atom dalam 12g karbon-12
 D 1 mol of carbon dioxide contains the number of molecules equals to the number of atoms in 12g carbon-12
1 mol karbon dioksida mengandungi bilangan molekul yang sama dengan bilangan atom dalam 12g karbon-12

- 23 Diagram 3 shows the set-up of the apparatus used to determine the empirical formula of a metal oxide.
Rajah 3 menunjukkan susunan radas untuk menentukan formula empirik suatu oksida logam.

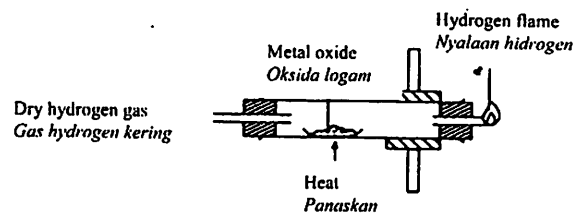


Diagram 3
 Rajah 3

- Which one of the following metal oxides is not suitable to be used in the experiment?
Antara oksida logam berikut yang manakah tidak sesuai digunakan dalam eksperimen?

- A Zinc oxide
Zink oksida
 B Lead(II) oxide
Plumbum(II) oksida
 C Copper(II) oxide
Kuprum(II) oksida
 D Iron(III) oxide
Ferum (III) oksida

- 24 Diagram 4 shows the electron arrangements of atoms P and Q
Rajah 4 menunjukkan susunan elektron bagi atom P dan Q

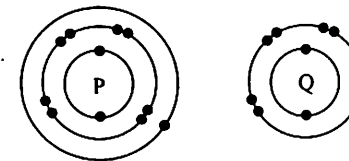


Diagram 4
 Rajah 4

- Which of the following is true when P react with Q?
Antara berikut yang manakah benar apabila P bertindak balas dengan Q

- A Atom P receives electrons
Atom P menerima elektron
 B Atom Q receives electrons
Atom Q menerima elektron
 C The compound formed has a formula of PQ₂
Sebatian terbentuk mempunyai formula PQ₂
 D The compound formed is made up of molecules
Sebatian terbentuk terdiri daripada molekul

- 25 An electric current is passed through aqueous solution copper(II) sulphate, CuSO_4 as shown in Diagram 5.
Arus elektrik dialirkan melalui larutan akueus kuprum(II) sulfat, CuSO_4 seperti ditunjukkan dalam Rajah 5.

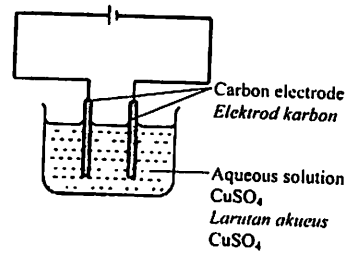


Diagram 5
Rajah 5

What is formed at the anode?
Apakah yang terbentuk di anod?

- A Hydrogen
Hidrogen
- B Oxygen
oksigen
- C Copper
kuprum
- D Sulphur
Sulfur

- 26 Diagram 6 shows the electrolysis of copper(II) sulphate using copper electrodes.
Rajah 6 menunjukkan elektrolisis larutan kuprum(II) sulfat menggunakan elektrod kuprum.

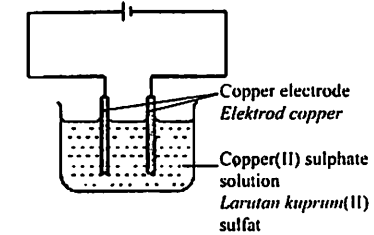
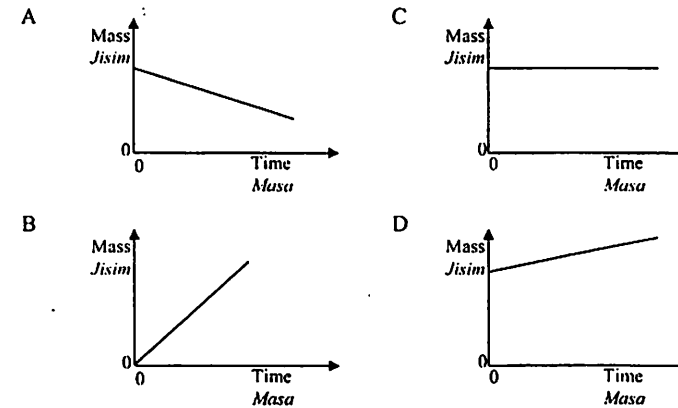


Diagram 6
Rajah 6

Which of the following graph shows the mass of the anode changes during electrolysis?

Antara graf berikut yang manakah menunjukkan perubahan jisim anod semasa elektrolisis?



- 27 A voltage is produced by the apparatus set-up as shown in Diagram 7.
Volta dihasilkan dari susunan radas seperti ditunjukkan dalam Rajah 7.

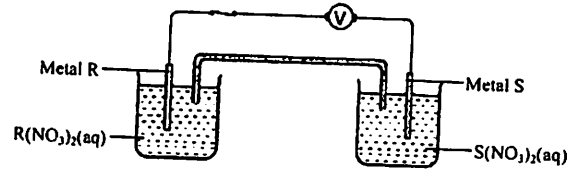
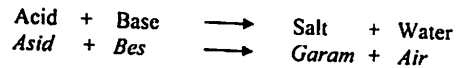


Diagram 7
Rajah 7

- Which of the following pairs of metals R and S will produce the largest voltage?
Antara pasangan logam-logam R dan S berikut yang manakah akan menghasilkan voltan paling tinggi?

	Metal R	Metal S
A	Zinc	Iron
B	Magnesium	Zinc
C	Magnesium	Copper
D	Iron	Copper

- 28 The following equation represents a neutralisation reaction.
Persamaan berikut mewakili tindak balas penutralan.



- Which of the following pairs of reactants produce a neutralization reaction?
Antara pasangan bahan tindak balas berikut, yang manakah menghasilkan tindak balas penutralan?

- A Sulphuric acid and calcium carbonate
Asid sulfurik dan kalsium karbonat
 B Nitric acid and magnesium oxide
Asid nitrik dan magnesium oksida
 C Hydrochloric acid and sodium sulphate
Asid hidroklorik dan natrium sulfat
 D Hydrochloric acid and sodium sulphate
Asid hidroklorik dan natrium sulfat

- 29 Lead(II) nitrate solution reacts with potassium iodide to form yellow precipitate and a colourless solution.
Larutan plumbum(II) nitrat bertindak balas dengan kalium iodida untuk membentuk mendakan kuning dan larutan tidak berwarna.

Which of the following ionic equations represents the reaction?
Antara persamaan ion berikut, yang manakah mewakili tindak balas tersebut?

- A $K^+ + I^- \longrightarrow KI$
 B $Pb^{2+} + 2I^- \longrightarrow PbI_2$
 C $K^+ + NO_3^- \longrightarrow KNO_3$
 D $Pb^{2+} + 2NO_3^- \longrightarrow Pb(NO_3)_2$

- 30 Diagram 8 shows the effect of a weight that is dropped onto steel ball bearing placed on bronze and copper blocks.
Rajah 8 menunjukkan kesan satu pemberat dijatuhkan keatas bebola keluli yang terletak diatas bongkah gangsa dan kuprum.

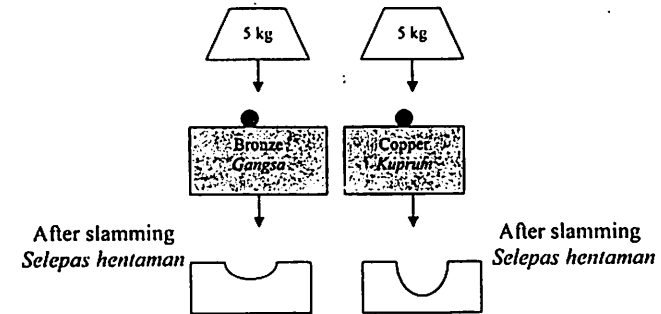


Diagram 8
Rajah 8

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

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

31 Which of the following will react the fastest with hydrochloric acid?
Antara berikut yang manakah akan bertindak paling cepat dengan asid hidroklorik?

- A powdered marble at 25°C
Serbuk marmar pada 25°C
- B marblechips at 40°C
ketulan marmar pada 40°C
- C powdered marble at 40°C
serbuk marmar pada 40°C
- D marblechips at 25°C
ketulan marmar pada 25°C

32 Ethanol vapour is passed through the hot porcelain chips. A gas is produced which able to
Wap etanol disalurkan melalui serpihan pasu berliang yang panas. Sejenis gas terhasil yang boleh

- I decolourised the purple colour of acidified potassium manganate (VII) solution.
menyahwarnakan warna ungu larutan kalium manganate(VII) berasid.
 - II decolourised the brown colour of bromine water.
menyahwarnakan warna perang air bromin.
 - III burnt completely in air to produce carbon dioxide gas and water.
terbakar dengan lengkap dalam udara untuk menghasilkan gas karbon dioksida dan air.
 - IV change the colour of blue litmus paper to red.
menukarkan warna kertas litmus biru kepada merah
- A I and III only
 - B II and IV only
 - C I, II and III only
 - D I, II, III and IV.

33 Table 3 shows the results of a reaction between halogen and halide solution.
Jadual 3 menunjukkan keputusan tindakbalas antara halogen dan larutan halida

Halogen Halide solution	Chlorine <i>klorin</i>	Bromine <i>Bromin</i>	Iodine <i>Iodin</i>
Sodium bromide <i>Natrium bromida</i>	√	-	X
Sodium chloride <i>Natrium klorida</i>	-	X	X
Sodium iodide <i>Natrium iodida</i>	√	√	-

Table 3
Jadual 3

Arrange the reactivity of halogens in ascending order.
Susun kereaktifan halogen dalam susunan menaik

- A Chlorine , bromine ,iodine
- B Iodine ,bromine , chlorine
- C Iodine , chlorine , bromine
- D Bromine , iodine ,chlorine

34 What is the oxidation number of chlorine in sodium chlorate, NaClO₃ ?
Apakah nombor pengoksidaan klorin dalam natrium klorat , NaClO₃ ?

- A +3
- B +4
- C +5
- D +6

- 35 Diagram 9 shows the setup of apparatus for the determination of heat of reaction.
Rajah 9 menunjukkan susunan radas untuk menentukan haba tindak balas.

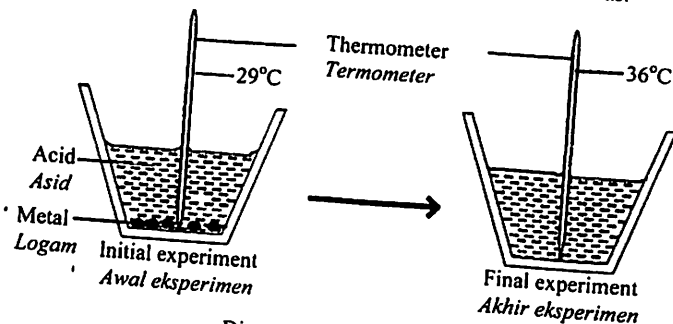


Diagram 9
Rajah 9

Based on diagram 9 which of the following statement is true?
Berdasarkan Rajah 9, pernyataan berikut yang manakah benar?

- I Process of bond formation occurs.
Proses pembentukan ikatan berlaku
- II The temperature increases during the reaction.
Suhu meningkat semasa tindak balas berlaku
- III The value of ΔH for the reaction is positive.
Nilai ΔH dalam tindak balas ini adalah positif
- IV The energy content of the products is lower than the energy content of the reactants.
Kandungan tenaga hasil tindak balas lebih rendah daripada kandungan tenaga bahan tindak balas
- A I and II only
I dan II sahaja
- B III and IV only
III dan IV sahaja
- C I, II and IV only
I, II dan IV sahaja
- D I, II, III and IV only
I, II, III dan IV sahaja

- 36 Table 4 shows the mass of elements T and O in oxide of T and their relative atomic mass respectively.

Jadual 4 menunjukkan jisim unsur T dan O dalam oksida T dan jisim atom relatif masing-masing.

Element Unsur	T	O
Mass Jisim	2.48g	1.92g
Relative atomic mass Jisim Atom relatif	31	16

Table 4
Jadual 4

What is the empirical formula for oxide of T?

Apakah formula empirik bagi oksida T?

- A T_2O
- B TO_3
- C T_2O_3
- D T_3O_2

- 37 What is the minimum mass of zinc required to react with excess dilute nitric acid to produced 240 cm^3 of hydrogen at room condition?
[Molar volume of gas = $24 \text{ dm}^3 \text{ mol}^{-1}$; Relative atomic mass: Zn = 65]

Berapakah jisim minimum yang diperlukan untuk bertindak balas dengan asid nitrik cair yang berlebihan untuk menghasilkan 240 cm^3 hidrogen pada keadaan bilik?
[Isipadu molar gas = $24 \text{ dm}^3 \text{ mol}^{-1}$ pada keadaan bilik; Jisim atom relative : Zn = 65]

- A 0.33 g
- B 0.65 g
- C 1.30 g
- D 6.50 g

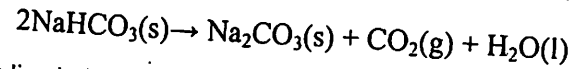
- 38 The mass of three atoms of element Y is equal to the mass of four carbon atoms. Y is not actual symbol of the element.
What is the relative atomic mass of element Y?
[Relative atomic mass: C = 12]

Jisim tiga atom unsur Y adalah sama dengan jisim empat atom karbon. Y bukan simbol sebenar unsur itu.

*Apakah jisim formula relatifnya?
[Jisim atom relatif: C = 12]*

- A 12
B 16
C 36
D 48

- 39 Sodium hydrogen carbonate decomposes on heating according to the following equation:
Natrium hidrogen karbonat terurai oleh haba mengikut persamaan berikut:



If 16.8 g of sodium hydrogen carbonate is used, what is the mass of sodium carbonate produced?

[Relative atomic mass: H = 1; C = 12; O = 16; Na = 23]

Jika 16.8 g natrium hidrogen karbonat digunakan, berapakah jisim natrium karbonat yang terhasil?

[Jisim atom relatif: H = 1; C = 12; O = 16; Na = 23]

- A 5.3 g
B 10.6 g
C 21.2 g
D 42.4 g

- 40 Diagram 10 shows an electron arrangement of element X. The element has same number of proton and neutron.

Rajah 10 menunjukkan susunan elektron bagi unsur X. Unsur ini mempunyai bilangan proton dan neutron yang sama.

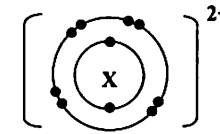


Diagram 10
Rajah 10

- Which of the following is true about atom of element X?
Antara berikut yang manakah benar tentang atom unsur X?

	Number of protons <i>Bilangan proton</i>	Nucleon number <i>Nombor nukleon</i>	Number of electrons <i>Bilangan elektron</i>
A	10	24	12
B	12	24	10
C	12	20	10
D	12	24	12

- 41 Table 5 shows the electron arrangements for atom of element T and atom of element U.
Jadual 5 menunjukkan susunan elektron bagi atom unsur T dan atom unsur U.

Element <i>Unsur</i>	Electron arrangement <i>Susunan elektron</i>
T	2.4
U	2.8.6

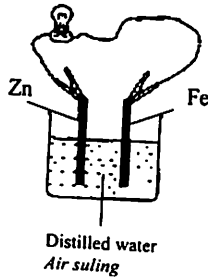
Table 5
Jadual 5

- Which pair of formula and type of bond is correct when element T reacts with element U?
Antara pasangan formula dan jenis ikatan yang manakah benar apabila unsur T bertindak balas dengan unsur U?

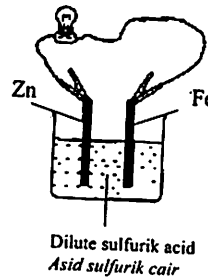
	Formula Formula	Type of Bonding Jenis Ikatan
A	T ₂ U	Ionic Ion
B	TU ₂	Ionic Ion
C	T ₂ U	Covalent Kovalen
D	TU ₂	Covalent Kovalen

- 42 In which of the following circuits is the bulb likely to shine most brightly?
Antara litar berikut yang manakah mentol menyala paling terang?

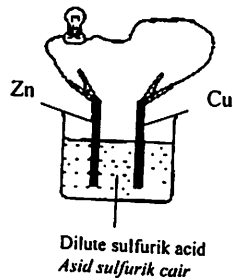
A



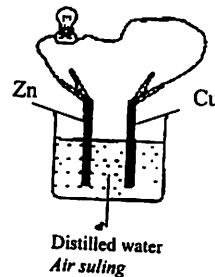
C



B



D



- 43 Metal M can be obtained by the electrolysis of its molten chloride. Table 6 show properties of the metal M and its chloride.
Logam M boleh diperolehi dari elektrolisis leburan kloridanya. Jadual 6 menunjukkan sifat logam M dan sifat kloridanya.

Substance Bahan	Melting point(°C) Takat lebur	Boiling point(°C) Takat didih	Density (g cm ⁻³) Ketumpatan
Metal M Logam M	330	1800	11.0
M chloride Klorida M	530	1000	5.0

Table 6
Jadual 6

- In what state will M metal be formed in the electrolysis?
Dalam keadaan apakah logam M akan terbentuk semasa elektrolisis?

- A Solid and below the molten M chloride.
Pepejal dan di bawah leburan klorida M.
- B Liquid and below the molten M chloride.
Cecair dan di bawah leburan klorida M.
- C Solid and on the surface of the molten M chloride.
Pepejal dan di atas permukaan leburan klorida M.
- D Liquid and on the surface of the molten M chloride.
Cecair dan di atas permukaan leburan klorida M.
- 44 What is the volume of 1.0 mol dm⁻³ potassium hydroxide solution that can neutralised 25.0 cm³ of 0.5 mol dm⁻³ sulphuric acid solution?
Berapakah isipadu larutan kalium hidroksida, 1.0 mol dm⁻³ yang dapat meneutralkan 25.0 cm³ larutan asid sulfurik 0.5 mol dm⁻³?
- A 6.25 cm³
- B 12.50 cm³
- C 25.00 cm³
- D 50.00 cm³

- 45 What substance can be used to verify the cation and anion in iron(III) sulphate solution?
Bahan apakah boleh digunakan untuk mengesahkan kation dan anion dalam larutan besi(III) sulfat?

Cation Kation	Anion Anion
A Nessler's reagent Reagen Nessler	Dilute nitric acid and silver nitrate Asid nitric cair dan argentums nitrat
B Nessler's reagent Reagen Nessler	Dilute hydrochloric acid and barium chloride Asid hidroklorik cair dan barium klorida
C Potassium hexacyanoferrate(II) Kalium heksasianoferat(II)	Dilute nitric acid and silver nitrate Asid nitric cair dan argentums nitrat
D Potassium hexacyanoferrate(II) Kalium heksasianoferat(II)	Dilute hydrochloric acid and barium chloride Asid hidroklorik cair dan barium klorida

- 46 Table 7 shows the result obtained from the decomposition of hydrogen peroxide.
Jadual 7 menunjukkan keputusan yang diperolehi dari penguraian hidrogen peroksida.

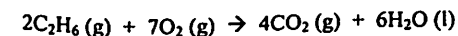
Time/minute Masa/minit	0	0.5	1.0	1.5	2.0	2.5	3.0
Volume of O ₂ gas / cm ³ Isipadu gas O ₂ / cm ³	0	170	260	305	340	350	350

Table 7
Jadual 7

Calculate the average rate of decomposition of hydrogen peroxide within the second minute.
Kira kadar tindak balas purata bagi penguraian hidrogen peroksida dalam minit kedua

- A 40.0 cm³ min⁻¹
B 80.0 cm³ min⁻¹
C 170.0 cm³ min⁻¹
D 340.0 cm³ min⁻¹

- 47 The following chemical equation represents the complete combustion of ethane.
Persamaan kimia berikut mewakili pembakaran lengkap etana.



What is the minimum volume of oxygen gas needed to burn 1 mol of ethane gas completely at room condition?

Berapakah isipadu minimum gas oksigen yang diperlukan untuk pembakaran lengkap 1 mol gas etana pada keadaan bilik?

[1 mol of gas occupying 24 dm³ at room condition]

- A 24 dm³
B 48 dm³
C 84 dm³
D 168 dm³

- 48 The following information shows the result of an experiment to determine the heat change for the combustion of propanol, C₃H₇OH.

Maklumat berikut menunjukkan keputusan bagi satu eksperimen untuk menentukan perubahan haba bagi pembakaran propanol, C₃H₇OH.

- Volume of water in the copper container = 300 cm³
Isipadu air dalam bekas kuprum
- Initial temperature of water in the copper container = 28.5 °C
Suhu awal air dalam bekas kuprum
- Highest temperature of water in the copper container = 69.5 °C
Suhu tertinggi air dalam bekas kuprum

What is the heat released by the combustion of propanol, C₃H₇OH ?

[Specific heat capacity of water = 4.2 J g⁻¹°C⁻¹; Water density = 1 g cm⁻³]

Berapakah haba yang dibebaskan oleh pembakaran propanol, C₃H₇OH ?
[Muatan haba tentu air = 4.2 J g⁻¹°C⁻¹; Ketumpatan air = 1 g cm⁻³]

- A 34.65 kJ
B 51.66 kJ
C 86.31 kJ
D 120.96 kJ

- 49 When 25 cm³ of 1.0 mol dm⁻³ hydrochloric acid is mixed with 25 cm³ of 1.0 mol dm⁻³ potassium hydroxide solution the temperature increases by 14°C.
Apabila 25 cm³ asid hidroklorik 1.0 mol dm⁻³ dicampurkan dengan 25 cm³ larutan kalium hidroksida 1.0 mol dm⁻³ suhu meningkat sebanyak 14°C.

What is the heat change for this reaction?

[Specific heat capacity of solution = 4.2 J g⁻¹ °C⁻¹]

Berapakah perubahan haba bagi tindak balas ini?

[Muatan haba tentu larutan = 4.2 J g⁻¹ °C⁻¹]

- A 1470 J
 B 2352 J
 C 2940 J
 D 3280 J

- 50 Diagram 11 shows the energy level diagram for the reaction between zinc and copper(II) sulphate solution.

Rajah 11 menunjukkan gambar rajah aras tenaga bagi tindak balas antara zink dan larutan kuprum(II) sulfat.

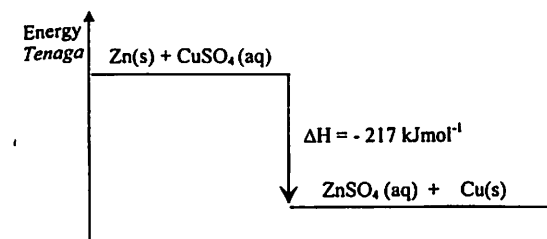


Diagram 11
 Rajah 11

What is the change in temperature when 50 cm³ of 0.1 mol dm⁻³ copper(II) sulphate solution is reacted with excess zinc?

[Specific heat capacity of solution = 4.2 Jg⁻¹°C⁻¹]

Berapakah perubahan suhu jika 50 cm³ larutan kuprum(II) sulfat 0.1 mol dm⁻³ ditindakbalaskan dengan zink berlebihan?

[Muatan haba tentu larutan = 4.2 Jg⁻¹°C⁻¹]

- A 2.1°C
 B 2.6°C
 C 5.2°C
 D 8.2°C

END OF QUESTION PAPER
 KERTAS SOALAN TAMAT