

PENTAKSIRAN AKHIR TAHUN

Skor

/140

KERTAS 1

1 jam 15 minit

1 hour 15 minutes

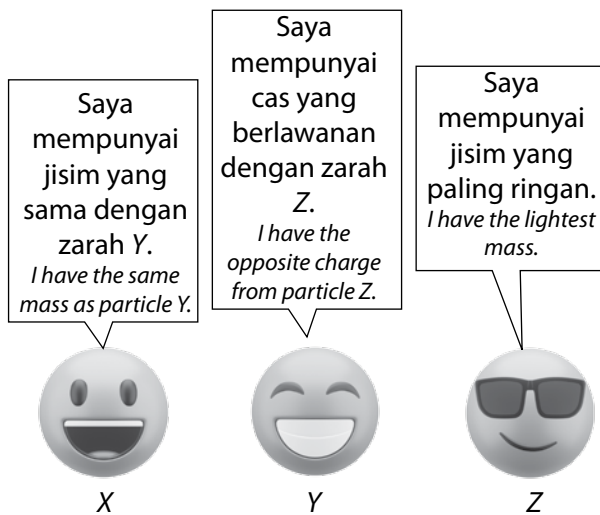
[40 markah / 40 marks]

Soalan 1 sehingga **Soalan 40** mempunyai empat pilihan jawapan **A, B, C** dan **D**. Pilih **jawapan yang terbaik** bagi setiap soalan.

Question 1 to Question 40 are followed by four options **A, B, C** and **D**. Choose **the best option** for each question.

1. Rajah 1 menunjukkan maklumat tentang zarah subatom X, Y dan Z.

Diagram 1 shows the information about subatomic particles of X, Y and Z.



Rajah 1 / Diagram 1

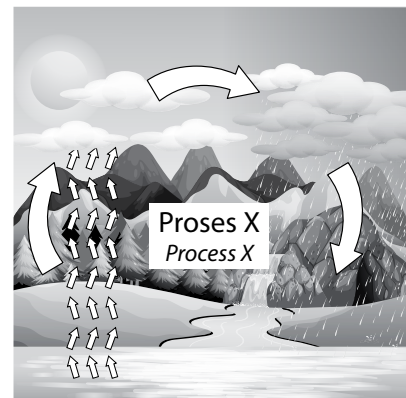
Apakah yang diwakili oleh X, Y dan Z?

What is represented by X, Y and Z?

	X	Y	Z
A	Neutron <i>Neutron</i>	Elektron <i>Electron</i>	Proton <i>Proton</i>
B	Proton <i>Proton</i>	Neutron <i>Neutron</i>	Elektron <i>Electron</i>
C	Neutron <i>Neutron</i>	Proton <i>Proton</i>	Elektron <i>Electron</i>
D	Elektron <i>Electron</i>	Neutron <i>Neutron</i>	Proton <i>Proton</i>

2. Rajah 2 menunjukkan kitaran air.

Diagram 2 shows a water cycle.



Rajah 2 / Diagram 2

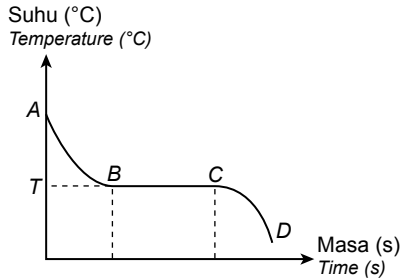
Apakah proses X dan perubahan tenaga yang terlibat?

What is process X and the energy change involved?

	Proses X <i>Process X</i>	Perubahan tenaga <i>Energy change</i>
A	Kondensasi <i>Condensation</i>	Tenaga diserap <i>Energy absorbed</i>
B	Kondensasi <i>Condensation</i>	Tenaga dibebas <i>Energy released</i>
C	Penyejatan <i>Evaporation</i>	Tenaga diserap <i>Energy absorbed</i>
D	Penyejatan <i>Evaporation</i>	Tenaga dibebas <i>Energy released</i>

3. Rajah 3 menunjukkan lengkung penyejukan bagi cecair Z.

Diagram 3 shows the cooling curve of liquid Z.



Rajah 3 / Diagram 3

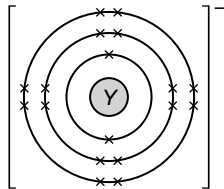
Apakah proses yang berlaku pada titik T dan keadaan fizik dari B ke C?

What is the process occurs at point T and physical state from B to C?

	Titik T <i>Point T</i>	Keadaan fizik <i>Physical state</i>
A	Pendidihan <i>Boiling</i>	Gas <i>Gas</i>
B	Pembekuan <i>Freezing</i>	Cecair <i>Liquid</i>
C	Pendidihan <i>Boiling</i>	Cecair dan gas <i>Liquid and gas</i>
D	Pembekuan <i>Freezing</i>	Cecair dan pepejal <i>Liquid and solid</i>

4. Rajah 4 menunjukkan susunan elektron bagi ion Y^- . Atom bagi unsur Y mengandungi 20 neutron.

Diagram 4 shows the electron arrangement for the Y^- ion. An atom of element Y contains 20 neutrons.



Rajah 4 / Diagram 4

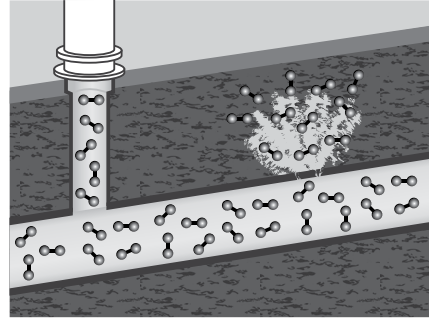
Berapakah nombor nukleon bagi unsur Y?

What is the nucleon number of element Y?

- A** 18
- B** 20
- C** 37
- D** 38

5. Rajah 5 menunjukkan kebocoran paip bawah tanah.

Diagram 5 shows the leakage of an underground pipe.



Rajah 5 / Diagram 5

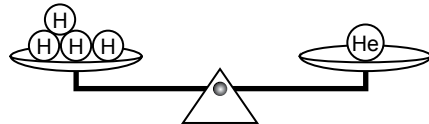
Antara yang berikut, yang manakah digunakan untuk mengesan kebocoran paip bawah tanah?

Which of the following is used to detect the leakage of the underground pipe?

- A** Karbon-14 / *Carbon-14*
- B** Fosforus-32 / *Phosphorus-32*
- C** Natrium-24 / *Sodium-24*
- D** Uranium-236 / *Uranium-236*

6. Rajah 6 menunjukkan perbandingan jisim atom relatif antara atom helium dengan atom hidrogen.

Diagram 6 shows the comparison of relative atomic mass between helium atom and hydrogen atoms.



Rajah 6 / Diagram 6

Antara yang berikut, yang manakah mewakili atom karbon dengan jisim atom relatif sebanyak 12?

Which of the following represents the carbon atom with the relative atomic mass of 12?

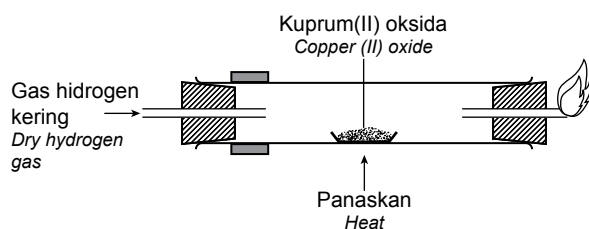
- A** $(\text{He})(\text{He})(\text{He})$
- B** $(\text{H})(\text{H})(\text{H})(\text{H})$
- C** $(\text{He})(\text{He})(\text{He})(\text{He})(\text{He})(\text{He})$
- D** $(\text{H})(\text{H})(\text{H})(\text{H})(\text{H})(\text{H})(\text{H})(\text{H})$

7. Formula kimia garam karbonat bagi M ialah MCO_3 . Apakah formula kimia garam klorida dan garam sulfat bagi M ?

The chemical formula of the carbonate salt of M is MCO_3 . What is the chemical formula of the chloride salt and sulphate salt of M ?

	M klorida M chloride	M sulfat M sulphate
A	MCl	M_2SO_4
B	MCl_2	MSO_4
C	MCl_2	M_2SO_4
D	MCl	MSO_4

8. Rajah 7 menunjukkan susunan radas untuk menentukan formula empirik kuprum(II) oksida. Diagram 7 shows the apparatus set-up to determine the empirical formula of copper(II) oxide.



Rajah 7 / Diagram 7

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

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

- A** Untuk mengelakkan kuprum bertindak balas dengan wap air
To prevent copper from reacting with water vapour
- B** Untuk memastikan semua udara disingkirkan daripada radas
To ensure that all air is removed from the apparatus
- C** Untuk memastikan semua kuprum(II) oksida diturunkan kepada kuprum
To ensure that all copper(II) oxide is reduced to copper
- D** Untuk mengelakkan kuprum panas daripada bertindak balas dengan udara membentuk kuprum(II) oksida
To prevent hot copper from reacting with air to form copper(II) oxide

9. Unsur Y terletak dalam kumpulan yang sama dengan neon dalam Jadual Berkala Unsur. Antara yang berikut, yang manakah ciri bagi unsur Y ?

Element Y is located in the same group as neon in the Periodic Table of Elements. Which of the following is the characteristic of element Y ?

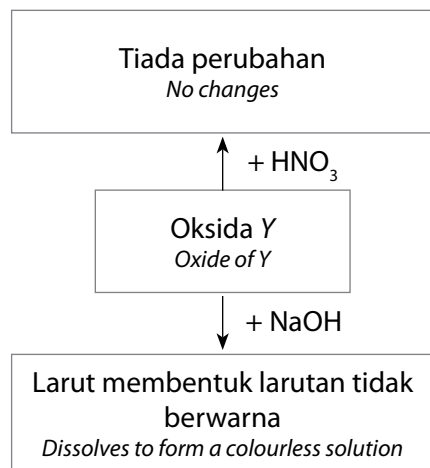
- A** Zarah diatom
Diatomic particle
- B** Lengai secara kimia
Inert chemically
- C** Cecair pada suhu bilik
Liquid at room temperature
- D** Ketumpatan yang tinggi
High density

10. Unsur Z berada di bawah klorin pada kumpulan yang sama dalam Jadual Berkala Unsur. Antara yang berikut, yang manakah menunjukkan formula kimia bagi hasil tindak balas dan kereaktifan tindak balas unsur Z dengan ferum berbanding dengan tindak balas antara klorin dengan ferum?

Element Z is located below chlorine in the same group in the Periodic Table of Elements. Which of the following shows the chemical formula of the product and the reactivity of element Z with iron compared to the reaction of chlorine with iron?

	Formula kimia bagi hasil tindak balas Chemical formula of product	Kereaktifan Reactivity
A	FeZ_2	Kurang reaktif Less reactive
B	FeZ_2	Lebih reaktif More reactive
C	FeZ_3	Kurang reaktif Less reactive
D	FeZ_3	Lebih reaktif More reactive

11. Rajah 8 menunjukkan tindak balas oksida suatu unsur dalam Kala 3 Jadual Berkala Unsur.
Diagram 8 shows the reactions of oxide of an element of Period 3 in the Periodic Table of Elements.



Rajah 8 / Diagram 8

Apakah oksida Y?
What is oxide of Y?

- A Aluminium oksida
Aluminium oxide
 - B Magnesium oksida
Magnesium oxide
 - C Silikon dioksida
Silicon dioxide
 - D Natrium oksida
Sodium oxide
12. Jadual 1 menunjukkan nombor proton bagi unsur W, X, Y dan Z.
Table 1 shows the proton numbers of elements W, X, Y and Z.

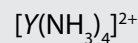
Unsur Element	W	X	Y	Z
Nombor proton Proton number	3	8	13	17

Jadual 1 / Table 1

Antara yang berikut, yang manakah susunan saiz atom yang semakin bertambah?
Which of the following shows the increasing order of atomic size?

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

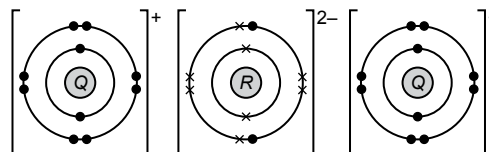
13. Rajah 9 menunjukkan formula ion bagi unsur Y.
Diagram 9 shows the ionic formula of element Y.



Rajah 9 / Diagram 9

Antara logam berikut, yang manakah unsur Y?
Which of the following metals is element Y?

- A Aluminium
Aluminium
 - B Kalsium
Calcium
 - C Kuprum
Copper
 - D Zink
Zinc
14. Rajah 10 menunjukkan susunan elektron bagi sebatian W.
Diagram 10 shows the electron arrangement of compound W.



Rajah 10 / Diagram 10

Antara pernyataan berikut, yang manakah betul?
Which of the following statements is correct?

- A Atom R menderma dua elektron untuk mencapai susunan elektron oktet
Atom R donates two electrons to achieve an octet electron arrangement
 - B Susunan elektron atom Q ialah 2.8.1
The electron arrangement of atom Q is 2.8.1
 - C Sebatian W larut di dalam pelarut organik
Compound W dissolves in organic solvents
 - D Ion Q⁺ dan R²⁻ tertarik untuk membentuk RQ₂
Q⁺ ion and R²⁻ ion are attracted to form RQ₂
15. Jadual 2 menunjukkan maklumat tentang unsur P dan unsur Q.
Table 2 shows the information about element P and element Q.

P	Q
<ul style="list-style-type: none"> • Mempunyai 4 elektron valens Contains 4 valence electrons • Mempunyai 3 petala berisi elektron Contains 3 shells filled with electrons 	<ul style="list-style-type: none"> • Mempunyai 6 elektron valens Contains 6 valence electrons • Mempunyai 2 petala berisi elektron Contains 2 shells filled with electrons

Jadual 2 / Table 2



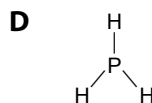
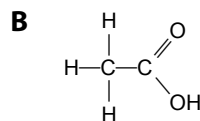
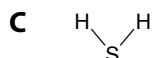
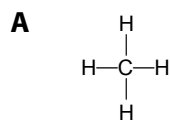
Apakah formula kimia dan jenis ikatan dalam sebatian yang terbentuk daripada tindak balas antara atom P dengan atom Q?

What is the chemical formula and the type of bond in the compound formed from the reaction between atom P and atom Q?

	Formula kimia Chemical formula	Jenis ikatan Type of bond
A	PQ_2	Kovalen Covalent
B	P_2Q	Kovalen Covalent
C	PQ_2	Ion Ionic
D	P_2Q	Ion Ionic

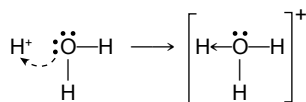
16. Antara molekul berikut, yang manakah mengandungi ikatan hidrogen?

Which of the following molecules contains a hydrogen bond?



17. Rajah 11 menunjukkan pembentukan sejenis ikatan dalam sebatian ion.

Diagram 11 shows the formation of a type of bond in an ionic compound.



Rajah 11 / Diagram 11

- A Ikatan datif
Dative bond
- B Ikatan ion
Ionic bond
- C Ikatan logam
Metallic bond
- D Ikatan kovalen
Covalent bond

18. Rajah 12 menunjukkan perbualan antara Adam dengan Jolin.

Diagram 12 shows a conversation between Adam and Jolin.



Rajah 12 / Diagram 12

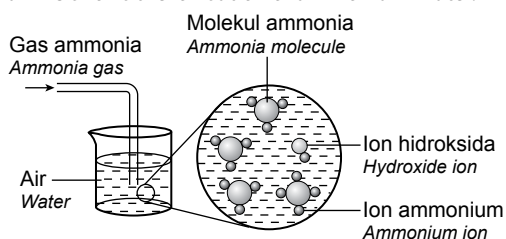
Antara pernyataan berikut, yang manakah betul?

Which of the following explanations are correct?

	Zink Zinc	Zink klorida Zinc chloride
A	Terdiri daripada ion Consists of ions	Terdiri daripada molekul Consists of molecules
B	Mempunyai ikatan kovalen yang kuat Has a strong covalent bond	Mempunyai ikatan ion yang kuat Has a strong ionic bond
C	Atom-atom ditarik oleh daya tarikan elektrostatik yang kuat Atoms are attracted by a strong electrostatic attraction force	Ion-ion ditarik oleh ikatan logam yang kuat Ions are held by a strong metallic bond
D	Elektron bergerak bebas dalam keadaan leburan Electrons move freely in molten state	Ion-ion bergerak bebas dalam keadaan leburan Ions move freely in molten state

19. Rajah 13 menunjukkan pengionan ammonia di dalam air.

Diagram 13 shows the ionisation of ammonia in water.



Rajah 13 / Diagram 13

Antara yang berikut, pernyataan manakah yang betul?

Which of the following statements is correct?

- A Darjah penceraian di dalam air tinggi
High degree of ionisation in water
- B Kepekatan ion hidroksida yang rendah
Low concentration of hydroxide ions
- C Mempunyai nilai pH kurang daripada 7
Has a pH value less than 7
- D Penunjuk universal menunjukkan warna merah
Universal indicator appears red

20. Asid dengan kebesan asid manakah yang dipadankan dengan betul?

Which acid is correctly matched to its basicity of acid?

	Asid Acid	Kebesanan asid Basicity of acid
A	Asid hidroklorik Hydrochloric acid	Asid monoprotik Monoprotic acid
B	Asid nitrik Nitric acid	Asid diprotik Diprotic acid
C	Asid sulfurik Sulphuric acid	Asid monoprotik Monoprotic acid
D	Asid etanoik Ethanoic acid	Asid diprotik Diprotic acid

21. Rajah 14 menunjukkan keadaan di bukit batu kapur.

Diagram 14 shows a situation at the limestone hill.



Rajah 14 / Diagram 14

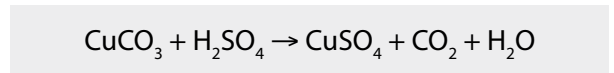
Antara situasi berikut, yang manakah serupa dengan Rajah 14?

Which of the following situations is similar to Diagram 14?

- A Pembentukan karies gigi
Formation of dental caries
- B Menghilangkan karat daripada pintu besi
Removing rust from an iron gate
- C Melarutkan garam biasa di dalam air
Dissolving common salt in water
- D Meletakkan kulit telur di dalam bikar yang mengandungi cuka
Placing an egg shell in a beaker containing vinegar

22. Persamaan berikut menunjukkan tindak balas antara kuprum(II) karbonat dengan asid sulfurik.

The following equation shows a reaction between copper(II) carbonate and sulphuric acid.



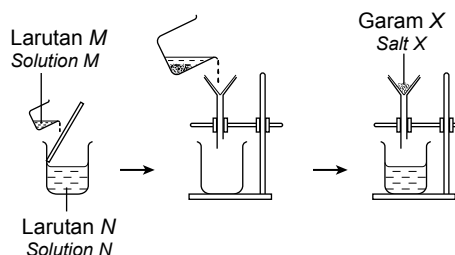
Apakah nama dan keterlarutan garam yang dihasilkan jika asid sulfurik digantikan dengan asid hidroklorik?

What is the name and the solubility of salt produced if sulphuric acid is replaced by hydrochloric acid?

	Nama garam Name of salt	Keterlarutan Solubility
A	Kuprum klorida Copper chloride	Larut Soluble
B	Kuprum klorida Copper chloride	Tidak larut Insoluble
C	Kuprum(II) klorida Copper(II) chloride	Larut Soluble
D	Kuprum(II) klorida Copper(II) chloride	Tidak larut Insoluble

23. Rajah 15 menunjukkan penyediaan garam X.

Diagram 15 shows the preparation of salt X.



Rajah 15 / Diagram 15

Persamaan kimia manakah yang mewakili penyediaan garam dalam Rajah 15?

Which chemical equation represents the preparation of salt in Diagram 15?

- A $\text{KOH} + \text{HCl} \rightarrow \text{KCl} + \text{H}_2\text{O}$
- B $\text{Na}_2\text{CO}_3 + \text{ZnCl}_2 \rightarrow \text{ZnCO}_3 + 2\text{NaCl}$
- C $2\text{CH}_3\text{COOH} + \text{ZnO} \rightarrow (\text{CH}_3\text{COO})_2\text{Zn} + \text{H}_2\text{O}$
- D $\text{Na}_2\text{SO}_4 + \text{MgCl}_2 \rightarrow \text{MgSO}_4 + 2\text{NaCl}$

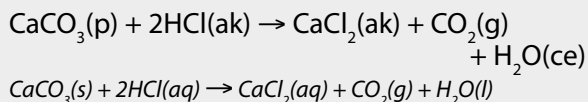
24. Asid sulfurik cair adalah salah satu bahan yang diperlukan bagi ujian pengesahan ion nitrat di dalam suatu larutan garam. Apakah bahan-bahan lain yang diperlukan untuk ujian tersebut?

Sulphuric acid is one the substances needed in the confirmatory test for nitrate ion in a salt solution. What are other substances required for the test?

- I Asid sulfurik pekat
Concentrated sulphuric acid
- II Asid hidroklorik pekat
Concentrated hydrochloric acid
- III Larutan ferum(II) sulfat
Iron(II) sulphate solution
- IV Larutan barium klorida
Barium chloride solution

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

25. Persamaan kimia berikut mewakili tindak balas antara kalsium karbonat dengan asid hidroklorik. The following chemical equation represents the reaction between calcium carbonate and hydrochloric acid.



Bagaimanakah kadar penghasilan gas karbon dioksida boleh ditingkatkan?

How can the rate of production of carbon dioxide gas be increased?

- A Meningkatkan saiz kalsium karbonat
Increase the size of calcium carbonate
- B Meningkatkan suhu larutan asid hidroklorik
Increase the temperature of hydrochloric acid
- C Mengurangkan isi padu larutan asid hidroklorik
Reduce the volume of hydrochloric acid
- D Mengurangkan kepekatan asid hidroklorik
Reduce the concentration of hydrochloric acid

26. Apakah mendakan kuning yang terbentuk apabila larutan natrium tiosulfat bertindak balas dengan asid hidroklorik?

What is the yellow precipitate formed when sodium thiosulphate solution reacts with hydrochloric acid?

- A Air
Water
- B Natrium klorida
Sodium chloride
- C Sulfur
Sulphur
- D Sulfur dioksida
Sulphur dioxide

27. Antara tindak balas berikut, yang manakah boleh dipengaruhi oleh perubahan tekanan?

Which of the following reaction can be affected by the change of pressure?

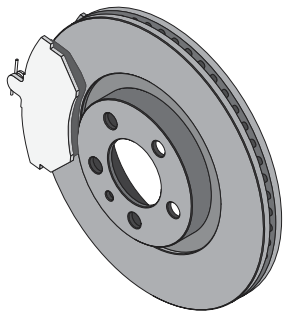
- A $\text{Mg}(\text{p}) + 2\text{HCl}(\text{ak}) \rightarrow \text{MgCl}_2(\text{ak}) + \text{H}_2(\text{g})$
 $\text{Mg}(\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{MgCl}_2(\text{aq}) + \text{H}_2(\text{g})$
- B $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{SO}_3(\text{g})$
 $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{SO}_3(\text{g})$
- C $2\text{H}_2\text{O}_2(\text{ak}) \rightarrow 2\text{H}_2\text{O}(\text{ce}) + \text{O}_2(\text{g})$
 $2\text{H}_2\text{O}_2(\text{aq}) \rightarrow 2\text{H}_2\text{O}(\text{l}) + \text{O}_2(\text{g})$
- D $\text{CaCO}_3(\text{p}) + 2\text{HCl}(\text{ak}) \rightarrow \text{CaCl}_2(\text{ak}) + \text{H}_2\text{O}(\text{ce}) + \text{CO}_2(\text{g})$
 $\text{CaCO}_3(\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{CaCl}_2(\text{aq}) + \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$

28. Kaca dengan sifat manakah yang dipadankan dengan betul?

Which glass is correctly matched to its property?

	Kaca Glass	Sifat Property
A	Kaca silika terlakur Fused glass	Mempunyai takat lebur sangat tinggi Has a high melting point
B	Kaca borosilikat Borosilicate glass	Tidak tahan haba Not resistant to heat
C	Kaca plumbum Lead crystal glass	Mempunyai pekali pengembangan yang rendah Has a low expansion coefficient
D	Kaca soda kapur Soda-lime glass	Mempunyai indeks biasan yang tinggi Has a high refractive index

29. Rajah 16 ialah kegunaan bahan T.
Diagram 16 is the use of substance T.



Rajah 16 / Diagram 16

Antara ciri-ciri berikut, yang manakah menjadikan bahan T sesuai untuk digunakan?
Which of the following characteristics makes substance T is suitable to be used?

- A Mudah dibentuk
Malleable
 - B Tahan kejutan terma
Can withstand thermal shocks
 - C Tahan kepada lelasan
Resistant to abrasion
 - D Kekonduksian elektrik yang rendah
Low electrical conductivity
30. Berikut ialah ciri-ciri bahan komposit X.
The following are the characteristics of composite material X.

- Memindahkan maklumat dengan kelajuan tinggi
Transfer information with high speed
- Penghantaran data, suara dan imej dalam format digital
Transmission of data, voices and images in a digital format

Apakah bahan komposit X?
What is composite material X?

- A Gentian optik
Optical fibre
 - B Kaca fotokromik
Photochromic glass
 - C Kaca gentian
Fibre glass
 - D Superkonduktor
Superconductor
31. Rajah 17 menunjukkan sebungkus baja ammonium sulfat.
Diagram 17 shows a pack of ammonium sulphate fertiliser.



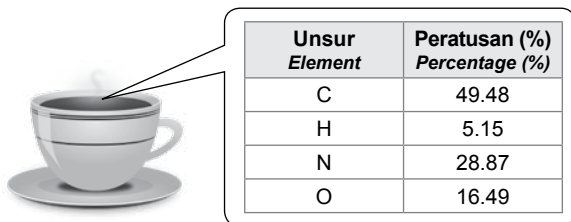
Rajah 17 / Diagram 17

Berapakah jumlah peratusan nitrogen dan sulfur di dalam baja itu?

[Jisim atom relatif: N = 14, H = 1, S = 32, O = 16]
What is the total percentage of nitrogen and sulphur in the fertiliser?

[Relative atomic mass: N = 14, H = 1, S = 32, O = 16]

- A 14.24%
 - B 21.21%
 - C 45.45%
 - D 46.15%
32. Berapakah bilangan ion klorida yang terdapat di dalam 20.8 g barium klorida?
[Jisim atom relatif: Cl = 35.5, Ba = 137; Pemalar Avogadro = $6.02 \times 10^{23} \text{ mol}^{-1}$]
What is the number of chloride ions in 20.8 g of barium chloride?
[Relative atomic mass: Cl = 35.5, Ba = 137; Avogadro constant = $6.02 \times 10^{23} \text{ mol}^{-1}$]
- A 6.020×10^{23}
 - B 1.204×10^{23}
 - C 1.806×10^{23}
 - D 2.408×10^{23}
33. Unsur X terdiri daripada isotop X-203 dan X-205. Jisim atom relatif X ialah 204.4. Berapakah peratusan X-205 di dalam campuran isotop?
Element X consists of isotopes X-203 and X-205. The relative atomic mass of X is 204.4. What is the percentage of X-205 in the isotopic mixture?
- A 3.0%
 - B 7.0%
 - C 30.0%
 - D 70.0%
34. Kafein ialah komponen utama di dalam kopi. Rajah 18 menunjukkan peratusan berdasarkan jisim unsur-unsur di dalam kafein.
Caffeine is a major component in coffee. Diagram 18 shows the percentage by mass of elements in the caffeine.



Rajah 18 / Diagram 18

Apakah formula empirik bagi kafein?

[Jisim atom relatif: H = 1, C = 12, N = 14, O = 16]

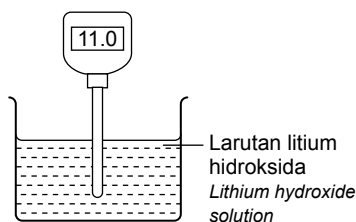
What is the empirical formula of caffeine?

[Relative atomic mass: H = 1, C = 12, N = 14, O = 16]

- A** CHNO **C** C₄H₅N₂O₂
B C₄H₅N₂O **D** C₈H₁₀N₄O₂

35. Rajah 19 menunjukkan nilai pH bagi larutan litium hidroksida.

Diagram 19 shows the pH value of lithium hydroxide solution.



Rajah 19 / Diagram 19

Berapakah kemolaran larutan litium hidroksida?

What is the molarity of the lithium hydroxide solution?

- A** 1.0 mol dm⁻³ **C** 0.01 mol dm⁻³
B 0.1 mol dm⁻³ **D** 0.001 mol dm⁻³

36. Dalam suatu pentitratan, 25 cm³ XOH 4.20 g dm⁻³ memerlukan 15.60 cm³ asid hidroklorik 0.12 mol dm⁻³ untuk bertindak balas lengkap. Apakah jisim atom relatif X?

[Jisim atom relatif: H = 1, O = 16]

In a titration, 25.00 cm³ of 4.20 g dm⁻³ XOH requires 15.60 cm³ of 0.12 mol dm⁻³ hydrochloric acid to react completely. What is the relative atomic mass of X?

[Relative atomic mass: H = 1, O = 16]

	Logam X Metal X	Jisim atom relatif Relative atomic mass
A	Litium / Lithium	7
B	Natrium / Sodium	23
C	Kalium / Potassium	39
D	Rubidium / Rubidium	86

37. Maklumat berikut adalah mengenai dua tindak balas yang melibatkan litium.

The following information is about two reactions that involve lithium.

Tindak balas I: Litium + gas oksigen → 3.75 g pepejal X

Reaction I: Lithium + oxygen gas → 3.75 g of solid X

Tindak balas II: Litium + gas klorin → pepejal Y

Reaction II: Lithium + chlorine gas → solid Y

Berapakah jisim pepejal Y yang terbentuk jika jisim litium yang sama digunakan dalam kedua-dua tindak balas?

[Jisim atom relatif: Li = 7, O = 16, Cl = 35.5]

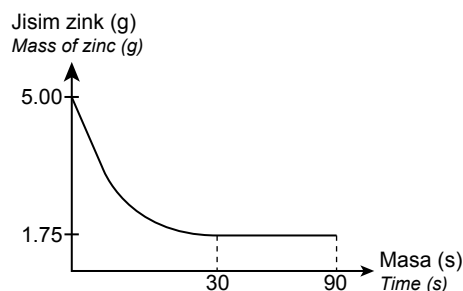
What is the mass of solid Y formed if the same mass of lithium is used in both reactions?

[Relative atomic mass: Li = 7, O = 16, Cl = 35.5]

- A** 5.312 g
B 10.625 g
C 21.250 g
D 42.500 g

38. Rajah 20 menunjukkan graf jisim zink melawan masa bagi tindak balas antara asid hidroklorik dengan serbuk zink.

Diagram 20 shows the graph of mass of zinc against time for the reaction between hydrochloric acid and zinc powder.



Rajah 20 / Diagram 20

Berapakah kadar tindak balas purata bagi tindak balas ini?

What is the average rate of reaction?

- A** 0.035 g s⁻¹
B 0.058 g s⁻¹
C 0.167 g s⁻¹
D 0.108 g s⁻¹

39. Jadual 3 menunjukkan kekonduksian elektrik bagi bahan X, Y dan Z.

Table 3 shows the electrical conductivity of substance X, Y and Z.

Bahan Substance	Keadaan mentol Condition of bulb	
	Keadaan pepejal Solid state	Keadaan leburan Molten state
X	Mentol menyala Bulb lights up	Mentol menyala Bulb lights up
Y	Mentol tidak menyala Bulb does not light up	Mentol tidak menyala Bulb does not light up
Z	Mentol tidak menyala Bulb does not light up	Mentol menyala Bulb lights up

Jadual 3 / Table 3

Apakah bahan X, Y dan Z?

What are substances X, Y and Z?

	X	Y	X
A	Plumbum(II) bromida Lead(II) bromide	Stanum Tin	Naftalena Naphthalene
B	Plumbum(II) bromida Lead(II) bromide	Plumbum(II) bromida Lead(II) bromide	Stanum Tin
C	Stanum Tin	Plumbum(II) bromida Lead(II) bromide	Naftalena Naphthalene
D	Stanum Tin	Naftalena Naphthalene	Plumbum(II) bromida Lead(II) bromide

40. Jadual 4 menunjukkan pemerhatian ke atas tiga ujian kimia bagi larutan T.

Table 4 shows the observations on three chemical tests for solution T.

Set Set	Ujian Test	Pemerhatian Observation
I	Tambahkan larutan natrium hidroksida sehingga berlebihan Add sodium hydroxide solution until in excess	Mendakan putih terbentuk dan tidak larut di dalam larutan natrium hidroksida berlebihan White precipitate is formed and insoluble in excess sodium hydroxide solution
II	Tambahkan larutan ammonia sehingga berlebihan Borosilicate glass	Tiada perubahan No changes
III	Tambahkan asid nitrik dan larutan argentum nitrat Add nitric acid and silver nitrate solution	White precipitate is formed Mendakan putih terbentuk

Jadual 4 / Table 4

Apakah larutan T?

What is solution T?

- A Aluminium klorida
Aluminium chloride
- B Kalsium klorida
Calcium chloride
- C Magnesium klorida
Magnesium chloride
- D Zink klorida
Zinc chloride

2 jam 30 minit
2 hours 30 minutes

Bahagian A
Section A

[60 markah / 60 marks]

Jawab **semua** soalan dalam bahagian ini.
Answer **all** questions in this section.

1. Jadual 1 menunjukkan nombor proton dan nombor nukleon atom Y dan Z. Huruf Y dan Z bukan simbol sebenar atom.

Table 1 shows the proton numbers and nucleon numbers of atoms Y and Z. The letter Y and Z are not the actual symbols of the atoms.

Atom Atom	Nombor proton Proton number	Nombor nukleon Nucleon number
Y	11	23
Z	8	16

Jadual 1 / Table 1

Berdasarkan Jadual 1,
Based on Table 1,

- (a) Apakah yang dimaksudkan dengan nombor proton?
What is meant by proton number?

[1 markah / 1 mark]

- (b) Tulis perwakilan piawai bagi atom Y.
Write the standard representation of atom Y.

[1 markah / 1 mark]

- (c) Atom Q ialah isotop bagi unsur Z. Nyatakan bilangan proton dalam atom Q.
Atom Q is an isotope of element Z. State the number of protons in atom Q.

[1 markah / 1 mark]

- (d) Y bertindak balas dengan Z membentuk sebatian Y_2Z . Sebatian Y_2Z mengalami proses peleburan pada $801\text{ }^\circ\text{C}$.

Y reacts with Z to form compound Y_2Z . Compound Y_2Z undergoes the melting process at $801\text{ }^\circ\text{C}$.

- (i) Nyatakan perubahan keadaan fizik Y_2Z semasa peleburan?
State the change in the physical state of compound Y_2Z during melting

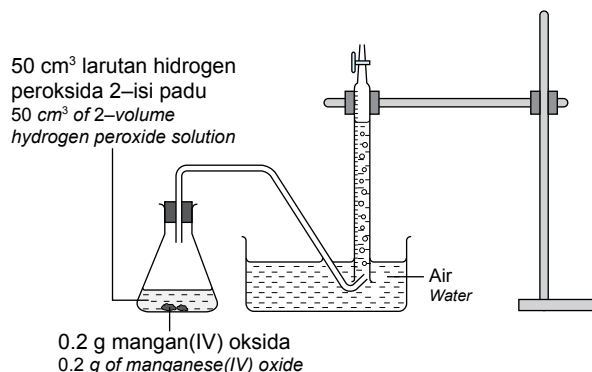
[1 markah / 1 mark]

- (ii) Nyatakan pergerakan zarah di dalam YZ pada suhu bilik.
State the movement of particles in YZ at room temperature.

[1 markah / 1 mark]

2. Rajah 1.1 menunjukkan susunan radas bagi satu eksperimen untuk mengkaji kadar tindak balas antara 50 cm^3 larutan hidrogen peroksida 2- isi padu.

Diagram 1.1 shows the apparatus set-up for an experiment to study the rate of reaction between 50 cm^3 of 2-volume of hydrogen peroxide solution.



Rajah 1.1 / Diagram 1.1

Jadual 2 menunjukkan keputusan yang diperolehi daripada eksperimen ini.

Table 2 shows the result obtained from this experiment.

Masa (minit) <i>Time (minute)</i>	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Jumlah isi padu gas yang dikumpul (cm^3) <i>Total volume of gas collected (cm^3)</i>	0.00	14.00	26.50	34.00	39.00	43.00	43.00	43.00	43.00

Jadual 2 / Table 2

- (a) Apakah fungsi mangan(IV) oksida dalam eksperimen ini?
What is the function of manganese(IV) oxide in this experiment?

[1 markah / 1 mark]

- (b) Penguraian hidrogen peroksida berlaku apabila zarah-zarah bahan tindak balas berlanggar antara satu sama lain. Hanya perlanggaran berkesan menghasilkan hasil tindak balas.

Nyatakan **dua** syarat untuk perlanggaran berkesan berlaku.

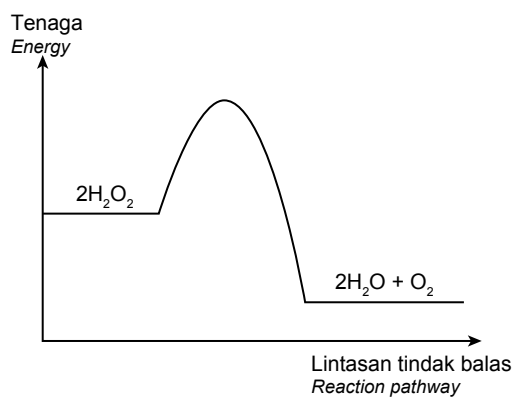
Decomposition of hydrogen peroxide occurs when the reacting particles collide with each other. Only effective collisions produce products.

*State the **two** conditions for an effective collision to occur.*

[2 markah / 2 marks]

- (c) Rajah 1.2 menunjukkan gambar rajah profil tenaga bagi tindak balas dalam eksperimen ini.

Diagram 1.2 shows the energy profile diagram for the reaction in this experiment.



Rajah 1.2 / Diagram 1.2

Lakarkan lengkung pada Rajah 1.2 apabila 0.2 g mangan(IV) oksida ditambah ke dalam larutan hidrogen peroksida.

Sketch the curve on Diagram 1.2 when 0.2 g of manganese(IV) oxide is added into hydrogen peroxide solution.

[1 markah / 1 mark]

- (d) Nyatakan isi padu gas yang terkumpul apabila eksperimen diulang dengan menambah 0.4 g mangan(IV) oksida.

State the volume of gas collected if the experiment is repeated by adding 0.4 g of manganese(IV) oxide.

[1 markah / 1 mark]

3. Rajah 2 menunjukkan sebuah periuk. Periuk tersebut diperbuat daripada keluli nirkarat yang merupakan sejenis aloi.

Diagram 2 shows a pot. The pot is made of stainless steel which is an alloy.



Rajah 2 / Diagram 2

- (a) (i) Nyatakan maksud aloi.
State the meaning of alloy.

[1 markah / 1 mark]

- (ii) Ferum adalah salah satu unsur dalam keluli nirkarat. Nyatakan **dua** unsur lain dalam keluli nirkarat.
*Ferum is one of the elements in stainless steel. State **two** other elements in stainless steel.*

[2 markah / 2 marks]

- (iii) Keluli nirkarat yang digunakan untuk membuat periuk mengandungi 71.5% ferum mengikut jisim. Jika jisim periuk ialah 2 kg, berapakah jisim ferum di dalamnya?
Stainless steel used to make the pot contains 71.5% of iron by mass. If the mass of the pot is 2 kg, what is the mass of iron in it?

[1 markah / 1 mark]

- (b) Cadangkan kaca yang paling sesuai untuk membuat penutup periuk. Berikan **satu** sebab.
*Suggest the type of glass that is most suitable to make the lid of the pot. Give **one** reason.*

[2 markah / 2 marks]

4. Rajah 3 menunjukkan tapak pelupusan sampah. Aktiviti mikroorganisma di kawasan itu telah menghasilkan gas metana, CH_4 .

Diagram 3 shows a waste disposal site. The activity of microorganisms in the wastes produces methane gas, CH_4 .



Rajah 3 / Diagram 3

- (a) Nyatakan jenis zarah yang terdapat di dalam metana, CH_4 .
State the type of particles in methane, CH_4 .

[1 markah / 1 mark]

(b) Hitung bilangan molekul di dalam metana.

[Pemalar Avogadro = $6.02 \times 10^{23} \text{ mol}^{-1}$; 1 mol gas menempati 24 dm^3 pada keadaan bilik]

Calculate the number molecules in methane.

[Avogadro constant = $6.02 \times 10^{23} \text{ mol}^{-1}$; 1 mole of gas occupies 24 dm^3 at room conditions]

[2 markah / 2 marks]

(c) Metana terbakar sepenuhnya dalam gas oksigen yang berlebihan untuk menghasilkan karbon dioksida dan air.

Methane burns completely in excess oxygen gas to produce carbon dioxide and water.

(i) Tulis persamaan kimia yang seimbang bagi tindak balas ini.

Write the balanced chemical equation for the reaction.

[2 markah / 2 marks]

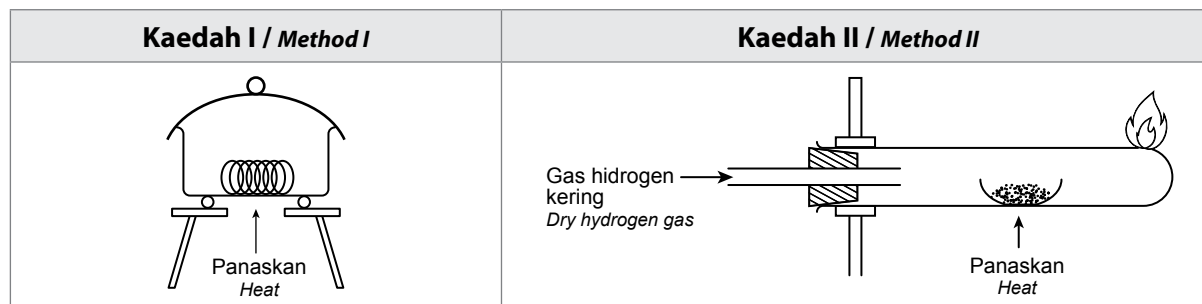
(ii) Nyatakan **satu** maklumat kualitatif dan **satu** maklumat kuantitatif yang boleh diperoleh daripada persamaan kimia dalam 4(c)(i).

*State **one** qualitative information and **one** quantitative information that can be obtained from the chemical equation in 4(c)(i).*

[2 markah / 2 marks]

5. Rajah 4 menunjukkan susunan radas bagi dua kaedah yang digunakan untuk menentukan formula empirik logam oksida.

Diagram 4 shows the apparatus set-ups for two methods used to determine the empirical formula of metal oxides.



Rajah 4 / Diagram 4

(a) Apakah yang dimaksudkan dengan formula empirik?

What is meant by empirical formula?

[1 markah / 1 mark]

(b) Cadangkan nama logam oksida yang digunakan dalam Kaedah I dan Kaedah II.

Suggest the name of metal oxide used in Method I and Method II.

(i) Kaedah I / Method I: _____

(ii) Kaedah II / Method II: _____

[2 markah / 2 marks]

(c) (i) Semasa menjalankan eksperimen dengan menggunakan Kaedah I, 2.60 g X bertindak balas dengan 0.64 g oksigen. Tentukan formula empirik bagi oksida X.

[Jisim atom relatif: X = 65, O = 16]

When carrying out an experiment using Method I, 2.60 g of X reacts with 0.64 g of oxygen. Determine the empirical formula of oxide of X.

[Relative atomic mass: X = 65, O = 16]

[2 markah / 2 marks]

(ii) Tulis persamaan kimia bagi tindak balas di 5(c)(i).

Write the chemical equation for the reaction in 5(c)(i).

[1 markah / 1 mark]

(d) (i) Gas hidrogen kering mesti dialirkan melalui radas selepas pemanasan logam oksida di 5(b)(ii) selesai. Apakah sebab tindakan ini diambil?

Dry hydrogen gas must be flowed through the apparatus after heating of metal oxide in 5(b)(ii) has completed. What is the reason for this action to be taken?

[1 markah / 1 mark]

(ii) Apakah yang perlu dilakukan untuk memastikan tindak balas antara logam oksida dengan gas hidrogen telah lengkap?

What should be done to ensure the reaction between metal oxide with hydrogen gas has completed?

[1 markah / 1 mark]

6. Garam halus ialah salah satu bahan kimia yang biasanya terdapat di rumah. Garam halus mengandungi lebih daripada 97% natrium klorida, NaCl.

Table salt is one of the most common household chemicals. Table salt contains more than 97% of sodium chloride, NaCl.

- (a) (i) Nyatakan jenis ikatan yang terbentuk dalam natrium klorida.
State the type of bond formed in sodium chloride.

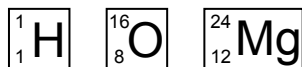
[1 markah / 1 mark]

- (ii) Takat lebur natrium klorida ialah 801 °C. Berikan **satu** sebab mengapa takat lebur natrium klorida tinggi.

*The melting point of sodium chloride is 801°C. Give **one** reason why the melting point of sodium chloride is high.*

[1 markah / 1 mark]

- (b) Rajah 5.1 menunjukkan perwakilan piawai bagi atom hidrogen, atom magnesium dan atom oksigen.
Diagram 5.1 shows the standard representations of hydrogen atom, magnesium atom and oxygen atom.



Rajah 5.1 / Diagram 5.1

Berdasarkan Rajah 5.1,
Based on Diagram 5.1,

- (i) Pilih **dua** unsur berbeza yang boleh bertindak balas membentuk sebatian kovalen X.
*Choose **two** different elements that can react to form a covalent compound X.*

[1 markah / 1 mark]

- (ii) Lukis rajah susunan elektron bagi sebatian kovalen X yang terbentuk di 6(b)(i).
Draw the electron arrangement diagram for the covalent compound X formed in 6(b)(i).

[2 markah / 2 marks]

- (c) Jadual 3 menunjukkan pemerhatian apabila dua oksida unsur ditambah ke dalam larutan kalium hidroksida dan asid nitrik.

Table 3 shows the observations when two oxide of elements are added into potassium hydroxide solution and nitric acid.

Oksida Oxide	Ditambah dengan larutan kalium hidroksida Added with potassium hydroxide solution	Ditambah dengan asid nitrik Added with nitric acid
Oksida S Oxide of S	Tiada perubahan No changes	Pepejal putih melarut White solid dissolves
Oksida T Oxide of T	Pepejal putih melarut White solid dissolves	Pepejal putih melarut White solid dissolves

Rajah 3 / Diagram 3

Berdasarkan Jadual 3, nyatakan sifat oksida S dan oksida T.

Based on Table 3, state the properties of oxide of S and oxide of T.

(i) Oksida S / Oxide of S: _____

(ii) Oksida T / Oxide of T: _____

[2 markah / 2 marks]

- (d) Pepejal R hidroksida, ROH boleh digunakan untuk menyingkirkan karbon dioksida di dalam kapal angkasa. Tindak balas yang berlaku antara ROH dengan karbon dioksida akan menghasilkan R_2CO_3 dan air.

Solid R hydroxide, ROH can be used to remove the carbon dioxide in a spacecraft. Reaction that occurs between ROH and carbon dioxide will produce R_2CO_3 and water.

- (i) Tulis persamaan kimia bagi tindak balas ini.

Write the chemical equation for the reaction.

_____ [1 markah / 1 mark]

- (ii) Hitung jisim ROH yang diperlukan untuk menyingkirkan 480000 cm^3 gas karbon dioksida.

[Jisim molar ROH = 24 g mol^{-1} ; 1 mol gas menempati 24 dm^3 pada keadaan bilik]

Calculate the mass of ROH that is needed to remove 480000 cm^3 of carbon dioxide gas.

[Molar mass of ROH = 24 g mol^{-1} ; 1 mole of gas occupies 24 dm^3 at room conditions]

[3 markah / 3 marks]

- (e) Rajah 6.2 menunjukkan belon kaji cuaca.

Diagram 6.2 shows a weather balloon.



Rajah 6.2 / Diagram 6.2

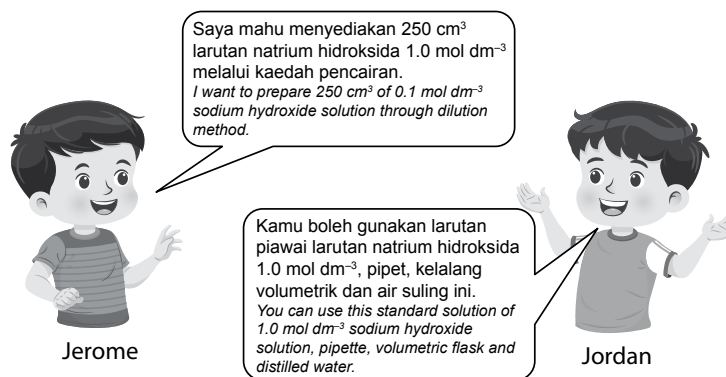
Antara unsur P dan unsur Q, yang manakah lebih sesuai digunakan di dalam belon kaji cuaca? Berikan **satu** sebab.

*Between element P and element Q, which one is more suitable to be used in the weather balloon? Give **one** reason.*

[2 markah / 2 marks]

8. Rajah 7.1 menunjukkan perbualan antara Jerome dan Jordan.

Diagram 7.1 shows a conversation between Jerome and Jordan.



Rajah 7.1 / Diagram 7.1

- (a) (i) Apakah yang dimaksudkan dengan larutan piawai? / *What is meant by standard solution?*

[1 markah / 1 mark]

- (ii) Hitung isi padu larutan natrium hidroksida 1.0 mol dm⁻³ yang diperlukan untuk menyediakan 250 cm³ larutan natrium hidroksida 0.1 mol dm⁻³.

Calculate the volume of 1.0 mol dm⁻³ sodium hydroxide solution needed to prepare 250 cm³ of 0.1 mol dm⁻³ of sodium hydroxide solution.

[1 markah / 1 mark]

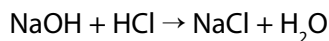
- (iii) Terangkan secara ringkas langkah-langkah untuk menyediakan 250 cm³ larutan natrium hidroksida 0.1 mol dm⁻³.

Describe briefly the steps to prepare 250 cm³ of 0.1 mol dm⁻³ sodium hydroxide solution.

[3 markah / 3 marks]

- (b) 25 cm³ larutan natrium hidroksida 0.1 mol dm⁻³ bertindak balas lengkap dengan asid hidroklorik 0.1 mol dm⁻³. Tindak balas antara larutan natrium hidroksida dengan asid hidroklorik diwakili oleh persamaan kimia berikut.

25 cm³ of 0.1 mol dm⁻³ sodium hydroxide solution reacts completely with 0.1 mol dm⁻³ hydrochloric acid. The reaction between sodium hydroxide solution and hydrochloric acid is represented by the following chemical equation.





Hitung isi padu asid hidroklorik yang digunakan dalam tindak balas ini.

Calculate the volume of hydrochloric acid used in the reaction.

[3 markah / 3 marks]

- (c) Sebuah syarikat pemaju merancang untuk membangunkan sebuah kawasan kediaman. Rajah 7.2 menunjukkan dua kawasan yang boleh dipilih sama ada berhampiran dengan kawasan A atau kawasan B.

A developer company plans to develop a residential area. Diagram 7.2 shows two areas that can be chosen either near to area A or area B.

Kawasan A: Luar bandar <i>Area A: Countryside</i>	Kawasan B: Kawasan perindustrian <i>Area B: Industrial area</i>
	
<ul style="list-style-type: none"> • Pencemaran indeks udara (API) = 40 <i>Air index pollution (API)</i> • pH air hujan = 6.0 <i>pH of rainwater</i> 	<ul style="list-style-type: none"> • Pencemaran indeks udara (API) = 120 <i>Air index pollution (API)</i> • pH air hujan = 4.9 <i>pH of rainwater</i>

Rajah 7.2 / Diagram 7.2

Pada pendapat anda, kawasan manakah yang lebih sesuai untuk membangunkan kawasan kediaman? Wajarkan jawapan anda.

In your opinion, which is the more appropriate area to develop a residential area? Justify your answer.

[2 markah / 2 marks]

Bahagian B

Section B

[40 markah / 40 marks]

Jawab **semua** soalan dalam bahagian ini.

Answer **all** questions in this section.

9. (a) Seorang murid menjalankan suatu eksperimen untuk mengkaji sifat keasidan bagi larutan A dan larutan B. Larutan A dan larutan B ialah campuran gas hidrogen klorida dengan dua pelarut yang berbeza, pelarut X dan pelarut Y.

A pupil carried out an experiment to study the acidic properties of solution A and solution B. Solution A and solution B are the mixture of hydrogen chloride gas with two different types of solvents, solvents X and solvent Y.

Larutan A: Gas hidrogen klorida + pelarut X

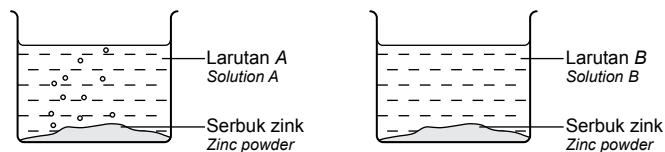
Solution A: Hydrogen chloride gas + solvent X

Larutan B: Gas hidrogen klorida + pelarut Y

Solution B: Hydrogen chloride gas + solvent Y

Rajah 8.1 menunjukkan pemerhatian bagi eksperimen itu.

Diagram 8.1 shows the observation for the experiment.



Rajah 8.1 / Diagram 8.1

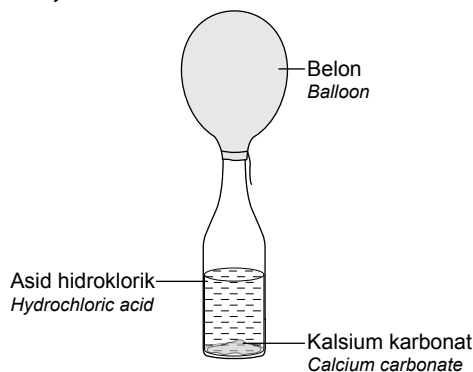
Kenal pasti pelarut X dan pelarut Y. Terangkan perbezaan dalam pemerhatian. Tulis **satu** persamaan ion untuk tindak balas ini.

*Identify solvent X and solvent Y. Explain the differences in the observations. Write **one** ionic equation for the reaction.*

[7 markah / 7 marks]

- (b) Rajah 8.2 menunjukkan tindak balas antara asid hidroklorik dengan kalsium karbonat di dalam botol plastik.

Diagram 8.2 shows the reaction between hydrochloric acid and calcium carbonate in a plastic bottle.



Rajah 8.2 / Diagram 8.2

Tulis persamaan kimia bagi tindak balas ini. Hitung jisim kalsium karbonat yang diperlukan untuk menghasilkan 1.2 dm^3 gas karbon dioksida pada suhu bilik untuk mengembungkan belon itu.

[Jisim atom relatif: C = 12, O = 16, Ca = 40; 1 mol gas menempati 24 dm^3 pada keadaan bilik]

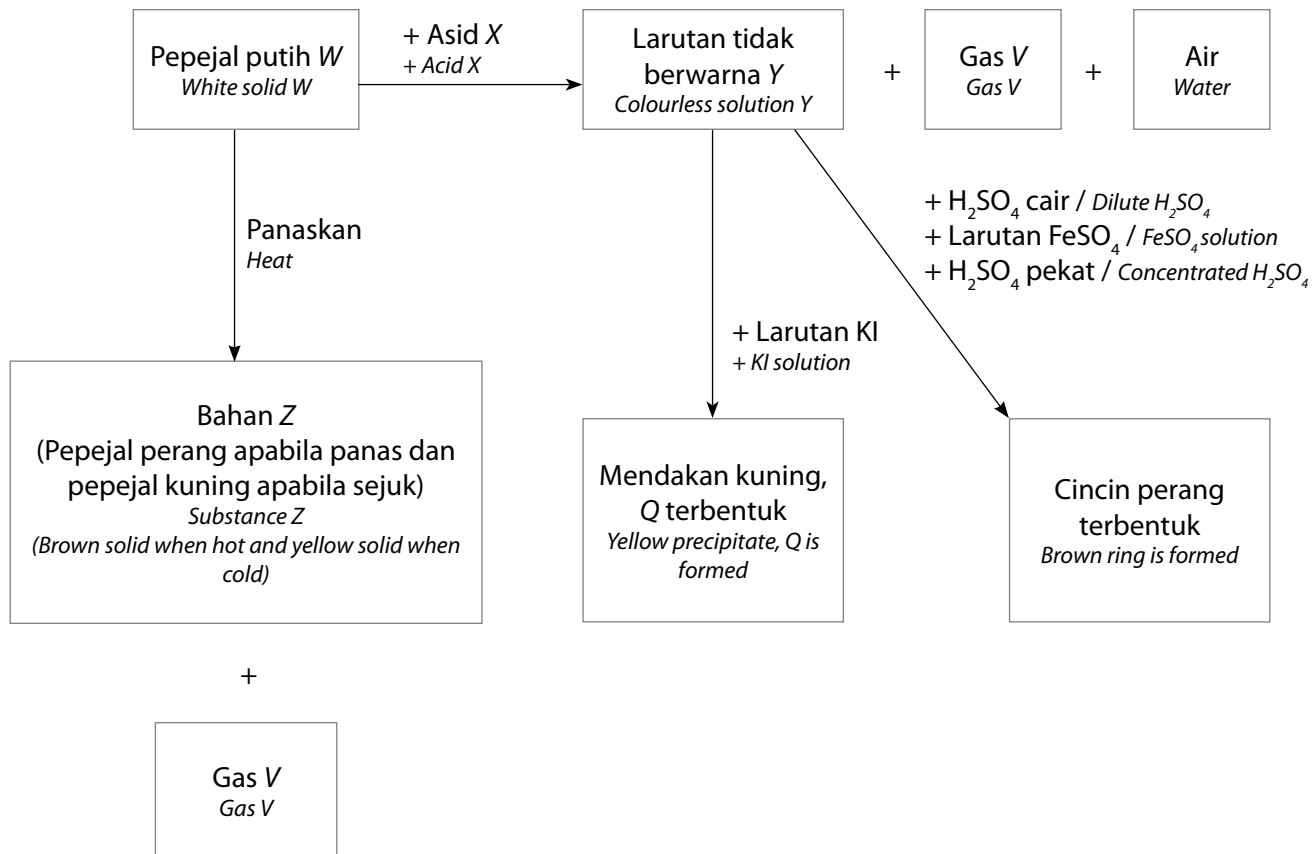
Write the chemical equation for the reaction. Calculate the mass of calcium carbonate required to produce 1.2 dm^3 of carbon dioxide gas at room conditions to inflate the balloon.

[Relative atomic mass: C = 12, O = 16, Ca = 40; 1 mole of gas occupies 24 dm^3 at room conditions]

[5 markah / 5 marks]

- (c) Rajah 8.3 menunjukkan penukaran pepejal W kepada larutan Y dan pepejal Z. Analisis ke atas larutan Y dilakukan untuk mengenal pasti kation dan anionnya.

Diagram 8.3 shows the conversion of solid W to solution Y and solid Z. Analysis on solution Y is carried out to identify its cation and anion.



Rajah 8.3 / Diagram 8.3

Berdasarkan Rajah 8.3,

Based on Diagram 8.3,

- (i) Kenal pasti bahan Q, V, W, X, Y and Z.

Identify substances Q, V, W, X, Y and Z.

[6 markah / 6 marks]

- (ii) Pepejal W bertindak balas dengan asid X menghasilkan larutan Y, gas V dan air.

Huraikan ujian kimia bagi gas V.

Solid W reacts with acid X to produce solution Y, gas V and water. Describe a chemical test for gas V.

[2 markah / 2 marks]

10. Maklumat berikut menunjukkan situasi yang berbeza untuk melarutkan garam batu di dalam air.
The following information shows different situations for dissolving rock salt in water.

Situasi I / Situation I:

Serbuk garam batu lebih mudah larut di dalam air sejuk berbanding dengan kepingan garam batu.
Rock salt powder is easier to dissolve in cold water compared to rock salt flakes.

Situasi II / Situation II:

Serbuk garam batu lebih mudah larut di dalam air panas berbanding dengan air sejuk.
Rock salt powder is easier to dissolve in hot water compared to cold water.

- (a) Berdasarkan salah **satu** situasi, nyatakan **dua** faktor yang terlibat. Kemudian, terangkan bagaimana faktor itu mempengaruhi keterlarutan garam batu.
*Based on **one** of the situations, state **two** factors involved. Then, explain how the factor affects the solubility of the rock salt.* [4 markah / 4 mark]
- (b) Jadual 4 menunjukkan keputusan bagi tiga set eksperimen yang dijalankan untuk mengkaji kadar tindak balas antara ketulan zink yang berlebihan dengan asid sulfurik.
Table 4 shows the results from three sets of experiment that have been carried out to investigate the rate of reaction between excess zinc granules and sulphuric acid.

Set Set	Bahan tindak balas Reactants	Masa yang diambil untuk mengumpul 50 cm ³ gas hidrogen (s) Time taken to collect 50 cm ³ of hydrogen gas (s)
I	50 cm ³ asid sulfurik 0.1 mol dm ⁻³ + ketulan zink berlebihan <i>50 cm³ of 0.1 mol dm⁻³ sulphuric acid + excess zinc granules</i>	110
II	50 cm ³ asid sulfurik 0.1 mol dm ⁻³ + ketulan zink berlebihan + 1 cm ³ larutan kuprum(II) sulfat <i>50 cm³ of 0.1 mol dm⁻³ sulphuric acid + excess zinc granules + 1 cm³ of copper(II) sulphate solution</i>	70
III	50 cm ³ asid sulfurik 0.2 mol dm ⁻³ + ketulan zink berlebihan <i>50 cm³ of 0.2 mol dm⁻³ sulphuric acid + excess zinc granules</i>	90

Jadual 4 / Table 4

- (i) Tulis persamaan kimia bagi tindak balas yang berlaku di Set I. Hitung isi padu maksimum gas hidrogen yang dihasilkan pada keadaan bilik.
 [1 mol gas menempati 24 dm³ pada keadaan bilik]
Write the chemical equation for the reaction that occurs in Set I. Calculate the maximum volume of hydrogen gas produced at room conditions.
[1 mole of gas occupies 24 dm³ at room conditions] [3 markah / 3 marks]
- (ii) Lakarkan graf isi padu gas melawan masa untuk Set I, Set II dan Set III.
Sketch the graph of volume of gas against time for Set I, Set II and Set III. [3 markah / 3 marks]

(iii) Bandingkan kadar tindak balas bagi

Compare the rate of reaction for

- Set I dan Set II / *Set I and Set II*
- Set I dan Set III / *Set I and Set III*

Terangkan jawapan anda berdasarkan teori perlanggaran.

Explain your answer based on the collision theory.

[10 markah / 10 marks]

Bahagian C

Section C

[20 markah / 20 marks]

Jawab **semua** soalan dalam bahagian ini.

Answer all questions in this section.

11. (a) Jadual 5.1 menunjukkan maklumat mengenai dua jenis kaca, W dan X. Kedua-dua jenis kaca boleh digunakan sebagai kaca tingkap.

Table 5.1 shows the information about two types of glasses, W and X. Both types of glasses can be used as window glass.

Kaca Glass	Komposisi Composition
W	Silika, kalsium karbonat, natrium karbonat <i>Silica, calcium carbonate, sodium carbonate</i>
X	Silika, kalsium karbonat, argentum klorida <i>Silica, calcium carbonate, silver chloride</i>

Jadual 5.1 / Table 5.1

(i) Kenal pasti kaca W dan kaca X. Nyatakan **dua** persamaan sifat kaca W dan kaca X.

*Identify glass W and glass X. State **two** similar properties of glass W and glass X.*

[4 markah / 4 marks]

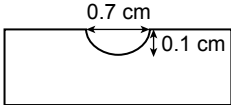
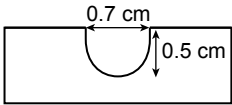
(ii) Pn. Fatimah ingin memasang tingkap kaca di rumah untuk menghalang sinar ultraungu. Jenis kaca manakah yang akan dipilih? Berikan alasan anda.

Mrs. Fatimah wants to install a glass window at her house to prevent ultraviolet rays. Which type of glass will be chosen? Give your reason.

[3 markah / 3 marks]

(b) Seorang murid menjalankan eksperimen untuk membandingkan kekerasan logam kuprum dengan aloinya, gangsa. Jadual 5.2 menunjukkan kedalaman lekuk selepas pemberat 1 kg dijatuhkan pada permukaan blok.

A pupil carried out an experiment to compare the hardness of pure copper and its alloy, bronze. Table 5.2 shows the depth of dents after 1 kg of weight was dropped onto the surface of the blocks.

Bahan Material	A	B
Kedalaman lekuk (cm) <i>Depth of dent (cm)</i>		

Rajah 9 / Diagram 9

Berdasarkan Rajah 9, kenal pasti bahan A dan bahan B. Kemudian, terangkan perbezaan pemerhatian.

Based on Diagram 9, identify material A and material B. Then, explain the difference in the observations.

[5 markah / 5 marks]

- (c) (i) Ferum dan keluli ialah dua jenis bahan yang sering digunakan dalam pembinaan bangunan tinggi. Bahan manakah yang lebih banyak digunakan dalam pembinaan bangunan tinggi? Berikan sebab anda.

Iron and steel are two types of materials frequently used in the construction of high-rise buildings. Which material is used more in the construction of high-rise buildings? Give your reason.

[2 markah / 2 marks]

- (ii) Terangkan secara ringkas langkah-langkah untuk membandingkan kadar kakisan antara ferum dengan keluli.

Describe briefly the steps to compare the rate of corrosion between iron and steel.

[6 markah / 6 marks]