

SULIT

4541/1

ANGKA GILIRAN

--	--	--	--	--	--	--	--	--

NAMA

--



MODUL PINTAS SPM TAHUN 2023

CHEMISTRY

4541/1

KERTAS 1

TINGKATAN 5

1 ¼ jam

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

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

Kertas soalan ini mengandungi 26 halaman bercetak

4541/1 @ MODUL PINTAS PPC PAHANG 2023

2. Antara bahan berikut, yang manakah wujud sebagai molekul?
Which of the following substances exist as molecules?

- A Helium
Helium
- B Karbon
Carbon
- C Oksigen
Oxygen
- D Platinum
Platinum

3.

Bertindak sebagai mangkin
Act as a catalyst
Berupaya membentuk ion berwarna
Able to form coloured ions
Mempunyai lebih dari satu nombor pengoksidaan
Has more than one oxidation number
Membentuk ion kompleks
Forms complex ions

Pernyataan di atas menunjukkan sifat-sifat unsur dalam Jadual Berkala Unsur. Antara berikut, unsur Kumpulan manakah yang menepati ciri-ciri di atas?

The statement above shows the properties of elements in the Periodic Table of Elements. Among the following, which Group of element are suitable to the above characteristics?

- A Unsur Kumpulan 1
Group 1 element
- B Unsur Kumpulan 17
Group 17 element
- C Unsur Kumpulan 18
Group 18 element
- D Unsur Kumpulan Peralihan
Transition element

4. Silikon dioksida, SiO_2 adalah sebatian kovalen yang mempunyai struktur molekul gergasi. Antara berikut yang manakah merupakan sifat silikon dioksida, SiO_2 ?
Silicon dioxide, SiO_2 is a covalent compound with a giant molecular structure. Which of the following is a property of silicon dioxide, SiO_2 ?
- A Struktur yang kecil dan ringkas
Small and simple structure
 - B Takat lebur dan takat didih yang tinggi
High melting point and boiling point
 - C Ikatan kovalen yang kuat di dalam molekul dan daya tarikan yang lemah antara molekul
Strong covalent bonds in molecule and weak forces of attraction between molecules
5. Antara bahan berikut, yang manakah bersifat asid?
Which of the following substances is acidic?
- A Ammonia
Ammonia
 - B Kalium oksida
Potassium oxide
 - C Karbon dioksida
Carbon dioxide
 - D Natrium hidroksida
Sodium hydroxide
6. Batu kapur adalah sejenis garam tak terlarutkan. Antara garam berikut, yang manakah sama jenis dengan batu kapur?
Limestone is an insoluble salt. Which of the following salts is in the same type as limestone?
- A Kalium karbonat
Potassium carbonate
 - B Natrium karbonat
Sodium carbonate
 - C Magnesium karbonat
Magnesium carbonate
 - D Ammonium karbonat
Ammonium carbonate

7. Pernyataan manakah paling baik menjelaskan maksud istilah perlanggaran berkesan?
Which statement best explains the meaning of effective collision?
- A Perlanggaran yang berlaku pada suhu yang tinggi
Collisions that occur at high temperatures
 - B Perlanggaran yang menyebabkan tindak balas kimia berlaku
Collisions that causes a chemical reaction to occur
 - C Perlanggaran yang menyebabkan pembentukan ikatan baru
Collision that causes the formation of new bonds
 - D Perlanggaran yang berlaku apabila zarah-zarah bahan tindak balas melanggar antara satu sama lain pada orientasi yang betul
Collisions occur when reactant particles collide with each other in the correct orientation
8. Proses pengaloiian boleh mengubah sifat logam tulen supaya menjadi lebih keras dan kukuh kerana dalam proses ini atom-atom asing yang dicampurkan bersama logam tulen menjadikan
The alloying process helps to alter the properties of a pure metal to make it harder and strong because in this process the foreign atoms that are mixed with the pure metals make
- A susunan atom-atom logam tulen lebih teratur
the arrangement of pure metal atoms is in more orderly arrangement
 - B ikatan antara atom-atom logam tulen bertambah kuat
the bond between the pure metal atoms become stronger
 - C lapisan atom-atom logam tulen lebih sukar menggelongsor
layers of pure metal atoms are more difficult to slide
 - D ikatan antara atom-atom logam tulen dengan atom-atom logam asing bertambah kuat
the bond between the pure metal atoms with foreign metal atoms become stronger
9. Antara berikut yang manakah merupakan agen pengoksidaan?
Which of the following are oxidising agents?
- I Kalium iodida
Potassium iodide
 - II Ferum(II) sulfat
Iron(II) sulphate
 - III Ferum(III) klorida
Iron(III) chloride
 - IV Hidrogen peroksida berasid
Acidified hydrogen peroxide

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

10. Antara berikut, padanan manakah yang benar?
Which of the following is the correct match?

	Siri homolog <i>Homologous series</i>	Formula am <i>General formula</i>	Nama kumpulan berfungsi <i>Name of functional group</i>
A	Alkana <i>Alkane</i>	C_nH_{2n+1} $n=1,2,..$	Ikatan tunggal <i>Single bond</i>
B	Alkena <i>Alkene</i>	C_nH_{2n} $n=2,3,..$	Ikatan ganda dua <i>Double bond</i>
C	Alkohol <i>Alcohol</i>	$C_nH_{2n+1}COOH$, $n=0,1,2,..$	Karboksil <i>Carboxyl</i>
D	Asid karboksilik <i>Carboxylic acid</i>	$C_nH_{2n+1}OH$, $n=1,2,..$	Hidroksil <i>Hydroxyl</i>

11. Maklumat berikut menunjukkan sifat-sifat unsur X.
The following information shows the properties of element X.

Logam yang lembut <i>Soft metal</i>
Larut dalam air dan menghasilkan larutan hidroksida X <i>Dissolves in water and produces hydroxide solution X</i>

Antara berikut, Kumpulan yang manakah unsur X terletak dalam Jadual Berkala Unsur?
Which of the following Group is the element X located in Periodic Table Of Elements?

- A Kumpulan 1
Group 1
- B Kumpulan 17
Group 17
- C Kumpulan 18
Group 18

12. Pelajar menggunakan sarung tangan getah yang diperbuat daripada getah tervulkan ketika menjalankan ujikaji di makmal. Apakah ciri getah tervulkan yang menyebabkannya sesuai digunakan dalam pembuatan sarung tangan ini?

Students use rubber gloves made of vulcanised rubber when conducting experiments in the laboratory. What is the characteristic of vulcanised rubber that make it suitable for use in the manufacture of these gloves?

- A Mudah teroksida
Easily oxidised
- B Lebih kuat daripada getah tak tervulkan
Stronger than unvulcanised rubber
- C Lebih mudah larut dalam pelarut organik
More soluble in organic solvents
- D Kurang kenyal daripada getah tak tervulkan
Less elastic than unvulcanised rubber

13. Apakah jenis bahan tambah makanan bagi asid askorbik ?

What are the types of food additives for ascorbic acid?

- A Pengawet
Preservatives
- B Pengantioksida
Antioxidants
- C Penstabil
Stabilisers

14. Silika digunakan untuk membuat semua jenis kaca. Jenis kaca manakah yang diperbuat daripada silika sahaja?

Silica is used to make all types of glass. Which type of glass is made up of only silica?

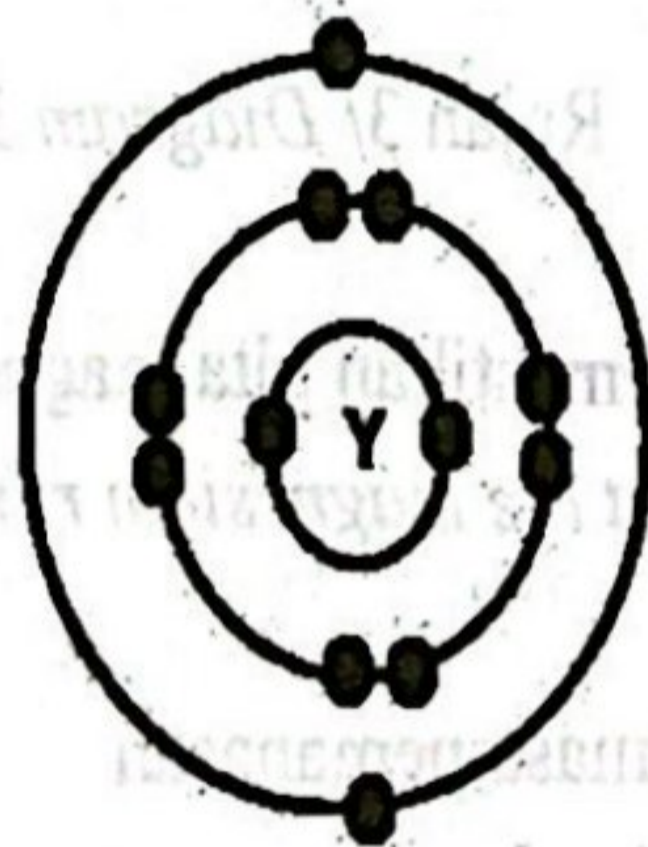
- A Kaca plumbum
Lead crystal glass
- B Kaca borosilikat
Borosilicate glass
- C Kaca soda kapur
Soda-lime glass
- D Kaca silika terlakur
Fused silica glass

15. Antara yang berikut, yang manakah merupakan ciri-ciri ahli dalam siri homolog alkena ?
Which of the following are characteristics of the homologous series of alkenes ?

- I Sebatian hidrokarbon tepu
Saturated hydrocarbon compounds
- II Menghasilkan nyalaan lebih berjelaga
Produces more sooty flame
- III Ikatan kovalen tunggal dalam molekul
Single covalent bond in a molecule
- IV Peratus jisim karbon per molekul lebih tinggi
The percentage of carbon by mass per molecule is higher

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

16. Rajah 2 menunjukkan susunan elektron bagi atom Y.
Diagram 2 shows the electron arrangement of atom Y.



Rajah 2/ Diagram 2

Bilangan neutron bagi atom Y ialah 12. Apakah perwakilan piawai bagi atom Y?
Number of neutron of atom Y is 12. What is the standard representation for atom Y?

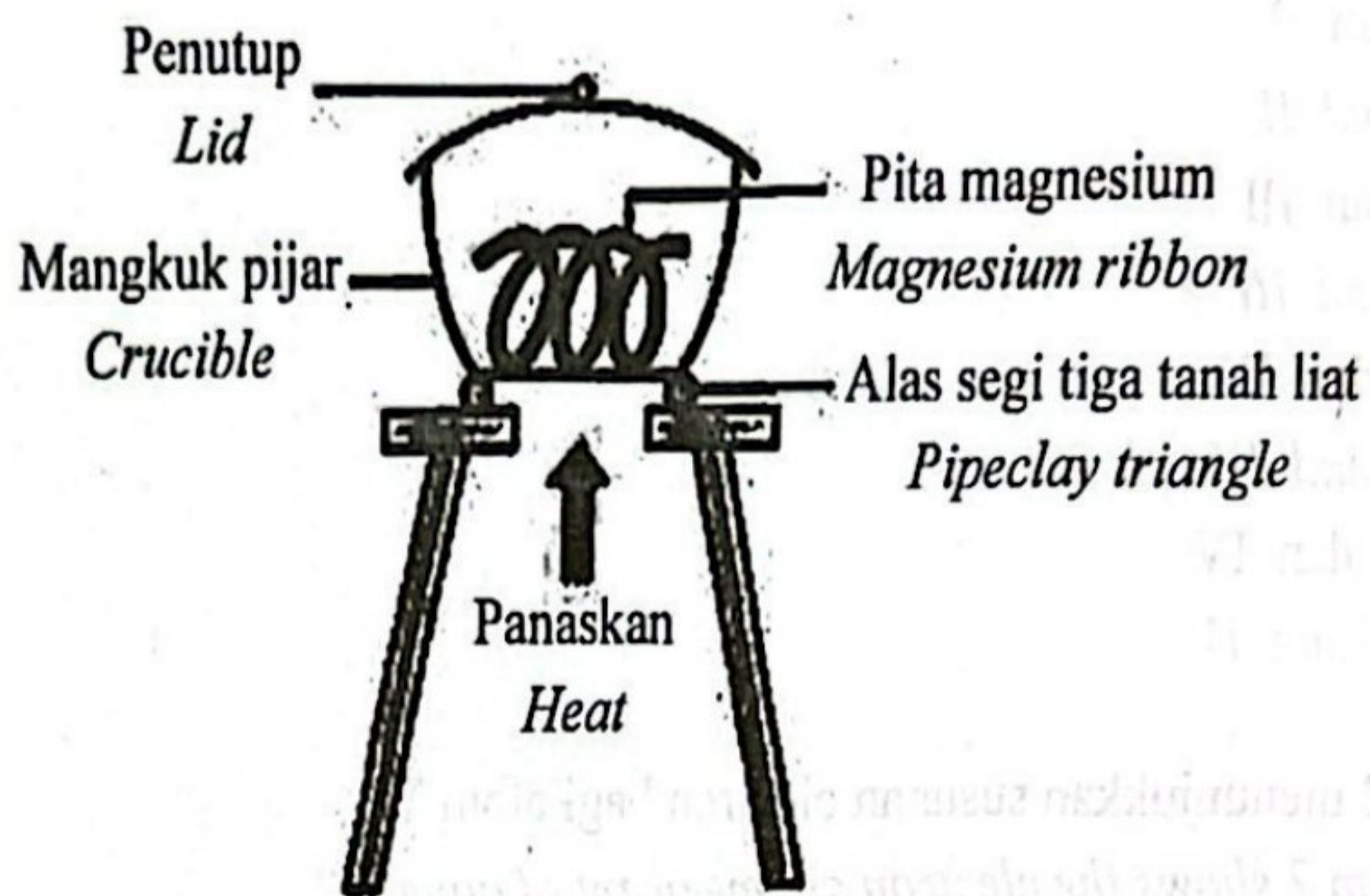
- A ${}_{12}^{24}\text{Y}$
- B ${}_{12}^{12}\text{Y}$

C 12
Y
6

D 12
Y
12

17. Rajah 3 menunjukkan suatu eksperimen yang dijalankan oleh seorang pelajar untuk menentukan formula empirik magnesium oksida.

Diagram 3 shows an experiment carried out by a student to determine the empirical formula of magnesium oxide.



Rajah 3/ Diagram 3

Bagaimanakah pelajar itu dapat memastikan pita magnesium itu terbakar dengan lengkap?
How can the student make sure that the magnesium ribbon burns completely?

- A Buka penutup sekali sekala semasa pemanasan
Open the lid occasionally during heating
- B Tutup mangkuk pijar dengan penutupnya sebaik sahaja pita magnesium mula terbakar
Close the crucible with its lid when magnesium ribbon starts burn
- C Ulang proses pemanasan, penyejukan dan penimbangan sehingga jisim tetap diperolehi
Repeat the heating, cooling and weighing process until a constant mass is obtained

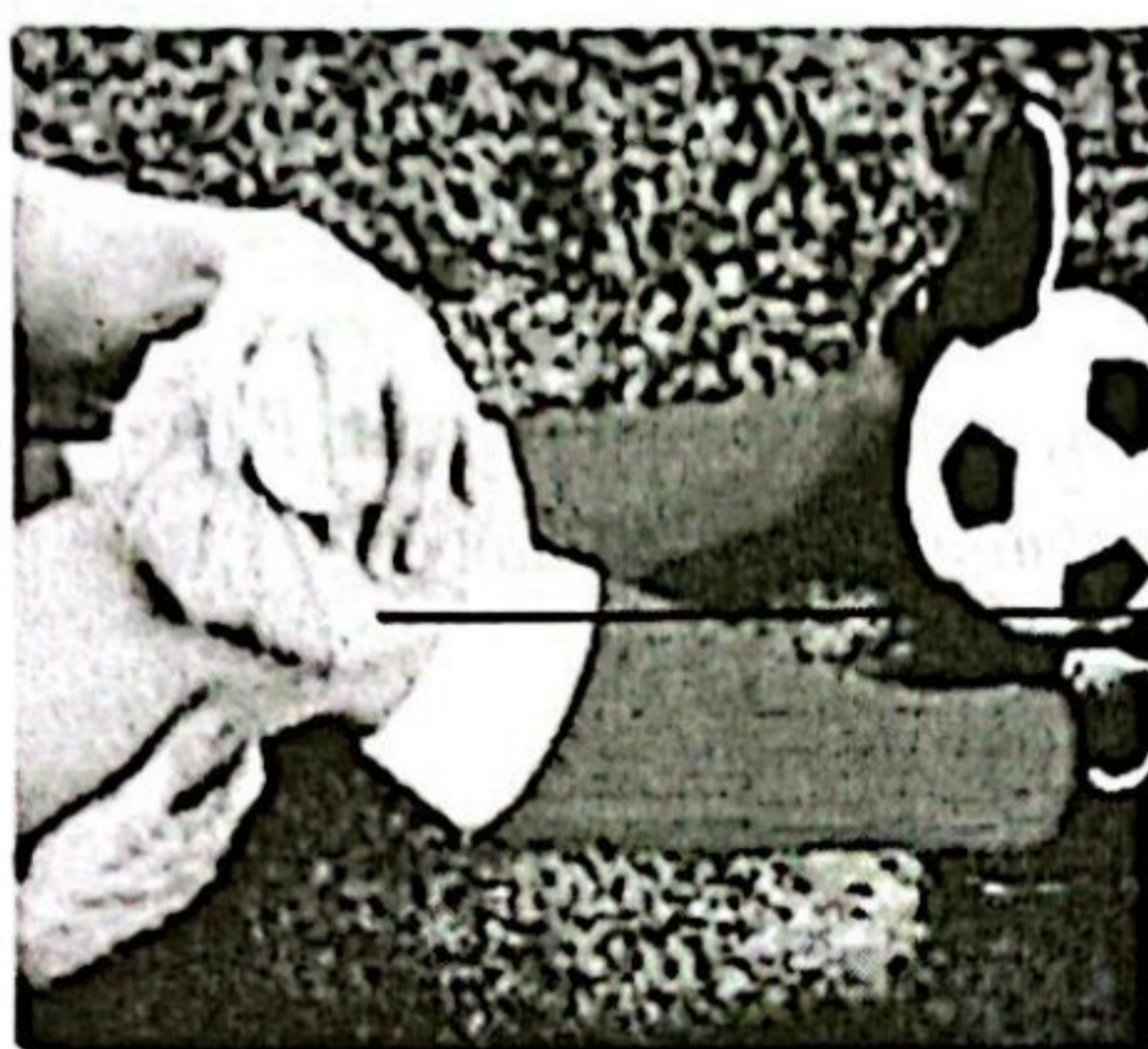
18. Persamaan kimia manakah yang betul ?

Which chemical equation is correct ?

- A $K + Cl_2 \rightarrow KCl$
- B $Mg + O_2 \rightarrow MgO_2$
- C $Zn + HCl \rightarrow ZnCl_2 + H_2$
- D $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$

19. Rajah 4 menunjukkan rawatan bagi seorang pemain bola sepak yang mengalami kecederaan pada kakinya.

Diagram 4 shows treatment for a football player who suffered injury on his leg.



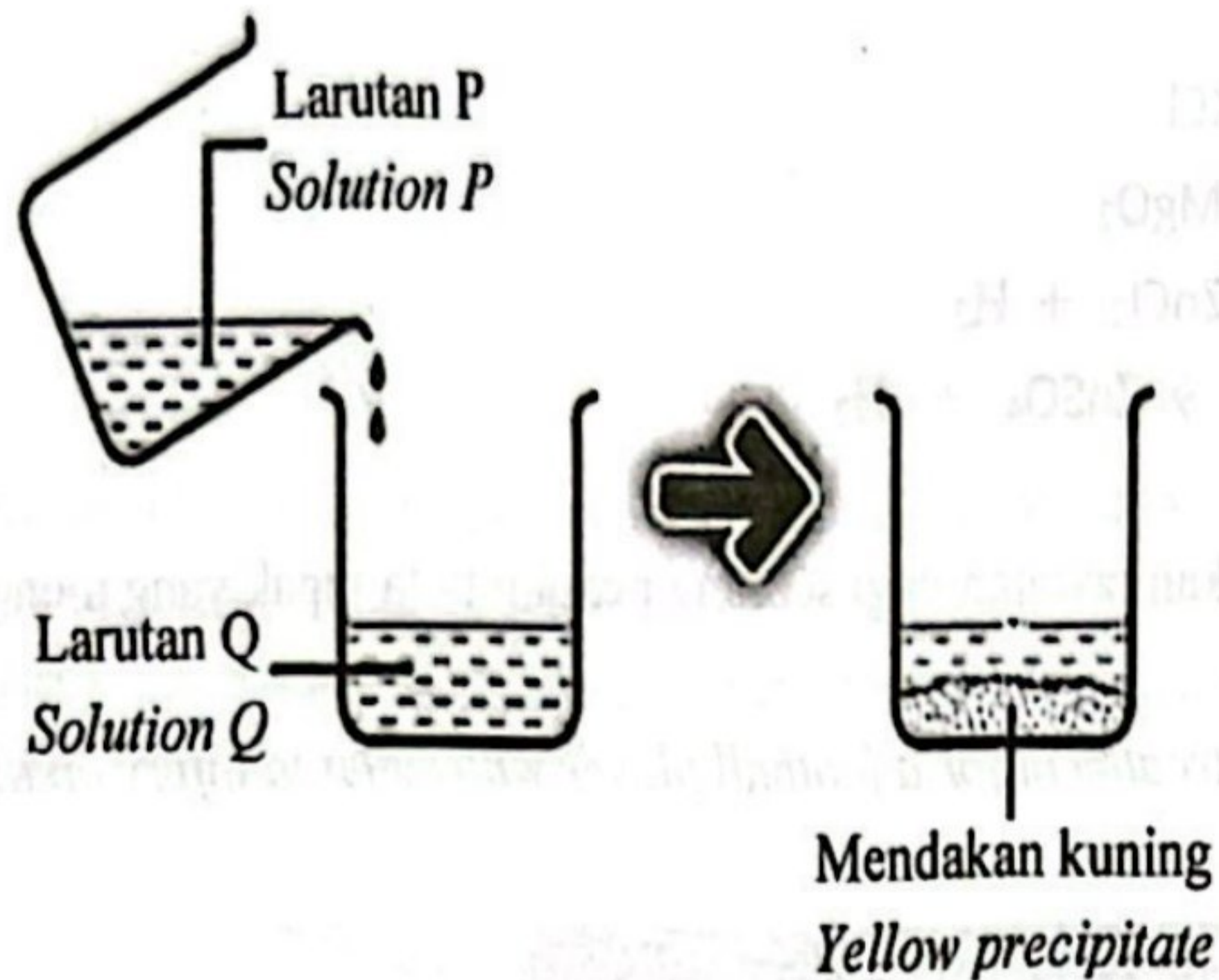
Rajah 4/ Diagram 4

Apakah bahan P?

What is substance P?

- A Kalsium klorida
Calcium chloride
- B Natrium karbonat
Sodium carbonate
- C Ammonium nitrat
Ammonium nitrate
- D Magnesium sulfat
Magnesium sulphate

20. Rajah 5 menunjukkan mendakan kuning terbentuk apabila larutan P dan larutan Q dicampurkan.
Diagram 5 shows a yellow precipitate formed when solution P and solution Q are mixed.



Rajah 5/ Diagram 5

- Antara yang berikut, yang manakah paling sesuai mewakili larutan P dan larutan Q?
Which of the following best represents solution P and solution Q?

	Larutan P Solution P	Larutan Q Solution Q
A	CaCl_2	Na_2SO_4
B	$\text{Pb}(\text{NO}_3)_2$	KI
C	$\text{Zn}(\text{NO}_3)_2$	K_2CO_3
D	$\text{Mg}(\text{NO}_3)_2$	Na_2CO_3

21. Apakah maksud kadar tindak balas merujuk kepada tindak balas antara pita magnesium dan 50 cm^3 asid nitrik 0.5 mol dm^{-3} ?
What is meant by rate of reaction based on the reaction between magnesium ribbon and 50 cm^3 of 0.5 mol dm^{-3} nitric acid?

- A Pengurangan isi padu asid nitrik per unit masa
Decreasing in volume of nitric acid per unit time
- B Peningkatan isi padu gas hidrogen per unit masa
Increasing in volume of hydrogen gas per unit time
- C Peningkatan kepekatan asid nitrik per unit masa
Increasing in concentration of nitric acid per unit time
- D Peningkatan jisim pita magnesium per unit masa
Increasing in mass of magnesium ribbon per unit time

22. Larutan ion Fe^{3+} boleh ditukarkan kepada ion Fe^{2+} dengan menambah serbuk zink. Bahan yang manakah boleh digunakan untuk menggantikan serbuk zink dalam tindak balas ini?
 Fe^{3+} ion solution can be converted to Fe^{2+} ion by adding zinc powder. Which substance can be used to replace zinc powder in this reaction?

- A Air klorin
Chlorine water
- B Larutan kalium iodida
Potassium iodide solution
- C Larutan kalium heksasianoferrat(II)
Potassium hexacyanoferrate(II) solution
- D Larutan kalium manganat(VII) berasid
Acidified potassium manganate(VII) solution

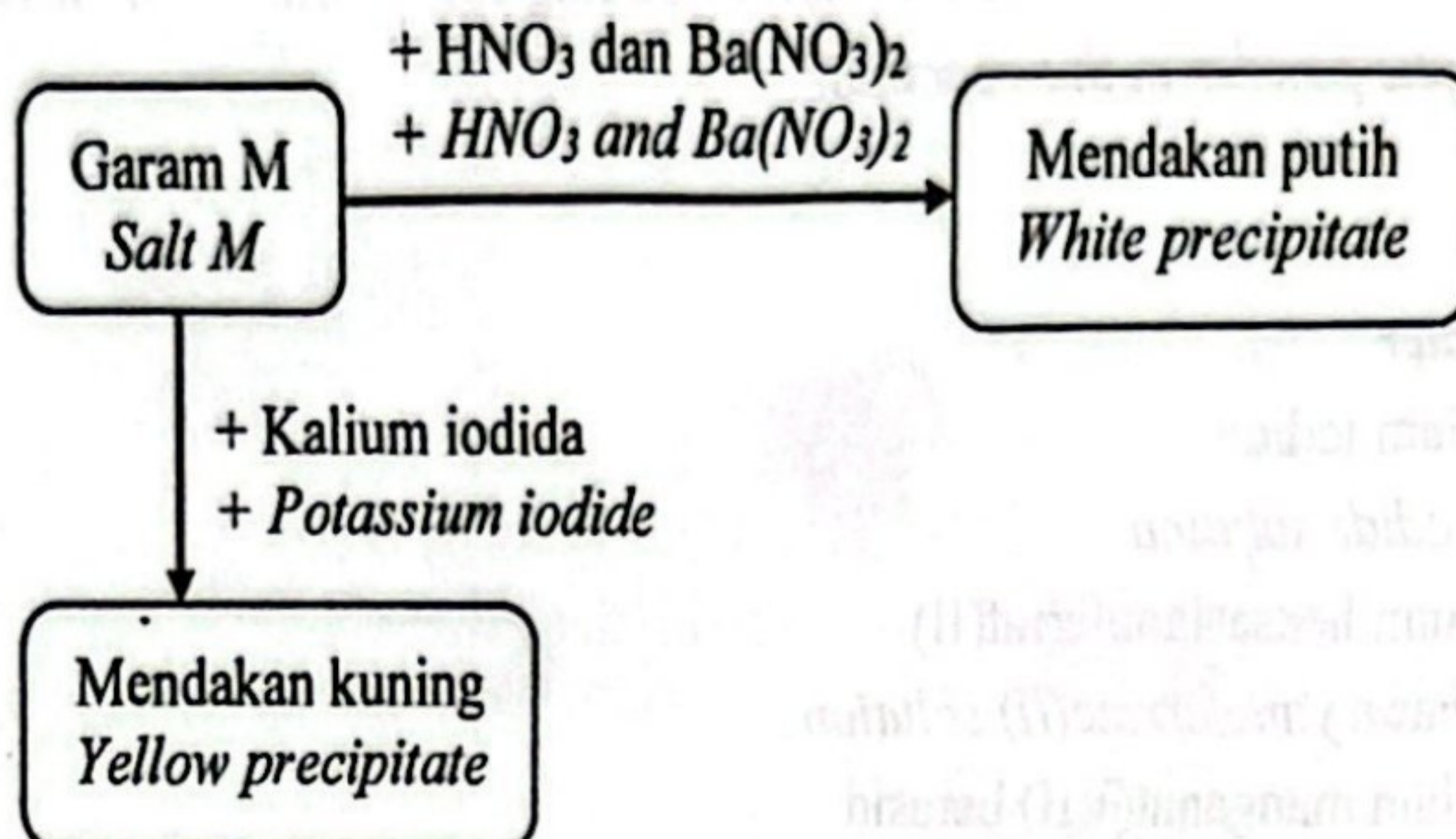
23. Sifat logam boleh dijelaskan dari segi struktur logam dan ikatan. Apakah asas bagi ikatan logam?
Properties of metal can be explained in terms of metallic structure and bonding. What is the basis of metallic bond?

- A Daya tarikan antara atom-atom logam
The attraction between metal atoms
- B Daya antara proton dan neutron
The attraction between protons and neutrons
- C Daya tarikan antara ion logam positif dan lautan elektron
The attraction between positive metal ions and sea of electrons
- D Daya antara ion logam positif dan elektron yang saling terikat
The attraction between positive metal ions and interlocking electrons

Experiment	Experiment
I	Zinc carbonate + 25 cm ³ acid Q 1.0 mol dm ⁻³ Excess zinc + 25 cm ³ of 1.0 mol dm ⁻³ acid Q
II	Zinc carbonate + 25 cm ³ acid P 1.0 mol dm ⁻³ Excess zinc + 25 cm ³ of 1.0 mol dm ⁻³ acid P

24. Rajah 6 menunjukkan siri tindak balas melibatkan garam M.

Diagram 6 shows a series of reaction involving salt M.



Rajah 6/ Diagram 6

Apakah kation dan anion yang hadir di dalam garam M?

What are the cation and anion present in salt M?

	Kation Cation	Anion Anion
A	Pb^{2+}	SO_4^{2-}
B	Fe^{2+}	Cl^-
C	Zn^{2+}	SO_4^{2-}
D	Fe^{2+}	Cl^-

25. Jadual 1 menunjukkan maklumat tentang dua eksperimen yang berbeza.

Table 1 shows the information about two different experiments.

Eksperimen Experiment	Bahan tindak balas Reactants	Kadar tindak balas Rate of reaction
I	Zink berlebihan + 25 cm^3 asid Q 1.0 mol dm^{-3} Excess zinc + 25 cm^3 of 1.0 mol dm^{-3} acid Q	$15\text{ cm}^3\text{ s}^{-1}$
II	Zink berlebihan + 25 cm^3 asid P 1.0 mol dm^{-3} Excess zinc + 25 cm^3 of 1.0 mol dm^{-3} acid P	$12\text{ cm}^3\text{ s}^{-1}$

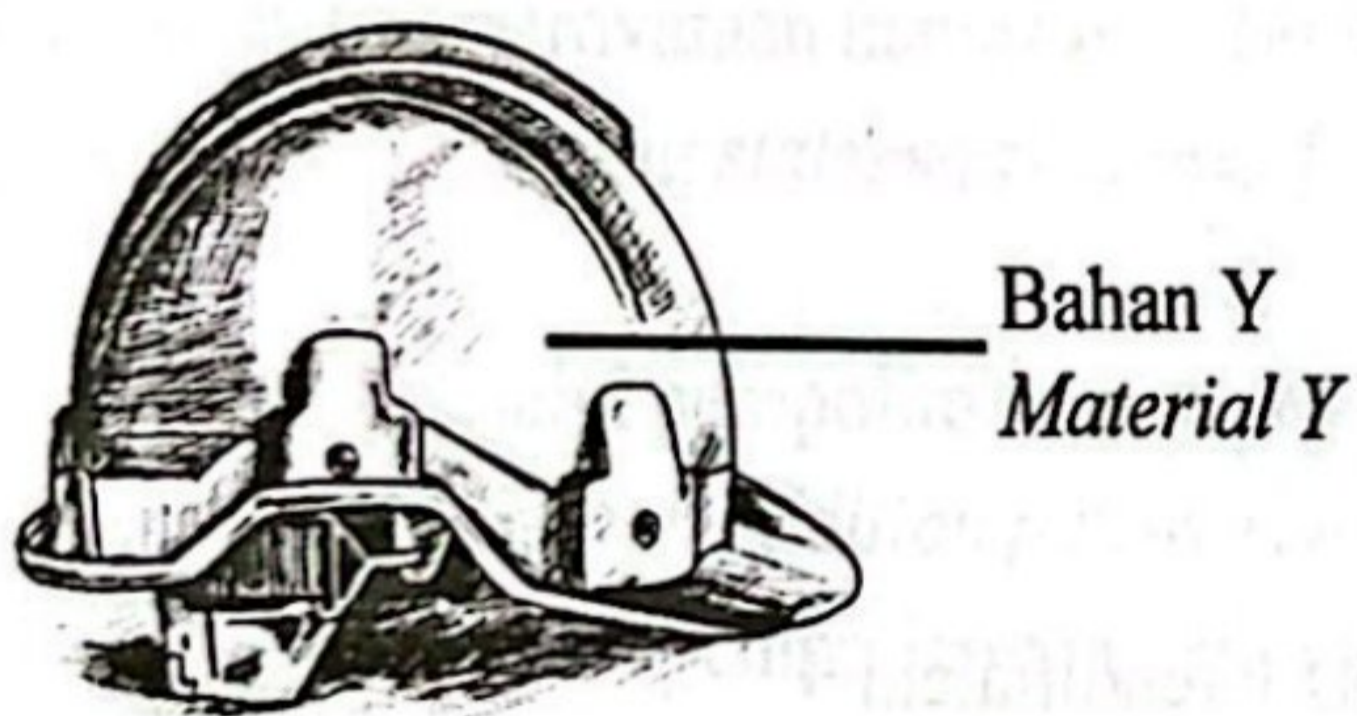
Jadual 1/ Table 1

Berdasarkan Jadual 1, pernyataan manakah menerangkan perbezaan dalam kadar tindak balas bagi kedua-dua eksperimen?

Based on Table 1, which of the following explains the difference in the rate of reaction for the two experiments?

- A Asid Q adalah asid yang lebih lemah daripada asid P
Acid Q is a weaker acid than acid P
- B Eksperimen I mempunyai tenaga pengaktifan yang lebih tinggi berbanding Eksperimen II
Experiment I has higher activation energy than Experiment II
- C Bilangan zarah-zarah bahan tindak balas dalam Eksperimen II lebih tinggi berbanding bilangan zarah-zarah bahan tindak balas dalam Eksperimen I
The number of particles of reactants in Experiment II is higher than the number of particles of reactants in Experiment I
- D Perlanggaran berkesan antara zarah-zarah bahan tindak balas dalam Eksperimen I lebih tinggi daripada perlanggaran berkesan zarah-zarah bahan tindak balas dalam Eksperimen II
The effective collision among particles of reactants in Experiment I is higher than the effective collision among particles of reactants in Experiment II

26. Rajah 7 menunjukkan topi keledar keselamatan. Ianya diperbuat daripada bahan Y.
Diagram 7 shows a safety helmet. It is made of material Y.



Rajah 7 / Diagram 7

Bahan Y mempunyai ciri-ciri berikut:
Material Y has the following properties:

- Kekuatan regangan yang tinggi
High stretching strength
- Penebat haba dan elektrik
Heat and electrical insulator
- Tahan kakisan
Resistant to corrosion
- Tahan lasak
Durable

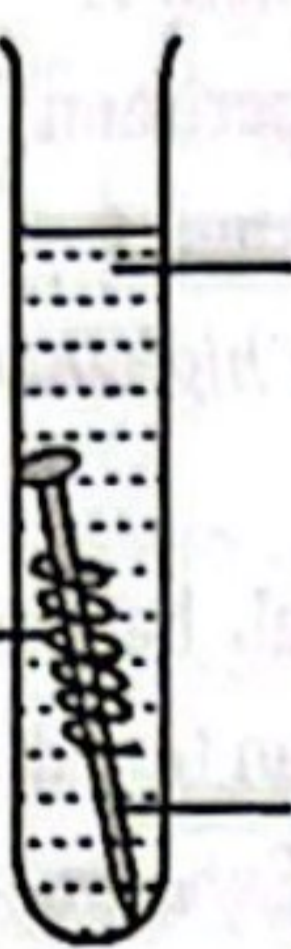
Antara yang berikut, yang manakah bahan Y?
Which of the following is material Y?

- A Gentian optik
Optical fibre
- B Kaca gentian
Fibre glass
- C Superkonduktor
Superconductor
- D Kaca fotokromik
Photochromic glass

27. Paku besi manakah yang tidak terkakis?

Which iron nail does not corrode?

A

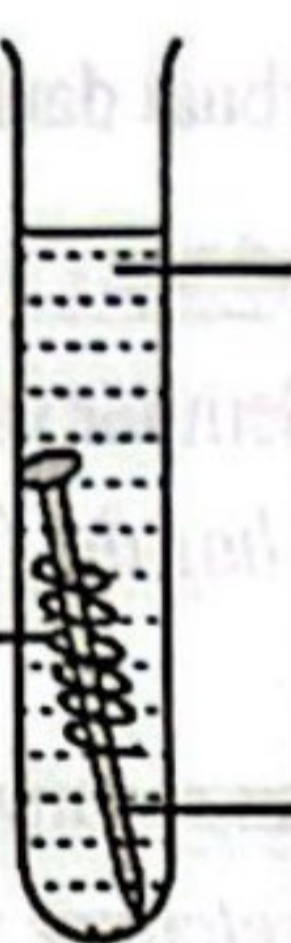


Agar-agar panas + fenolftalein + larutan kalium heksasianoferat(III)
Hot agar + phenolphthalein + potassium hexacyanoferrate(III) solution

Plumbum
Lead

Paku besi
Iron nail

B




Agar-agar panas + fenolftalein + larutan kalium heksasianoferat(III)
Hot agar + phenolphthalein + potassium hexacyanoferrate(III) solution

Argentum
Silver

Paku besi
Iron nail

C




Agar-agar panas + fenolftalein + larutan kalium heksasianoferat(III)
Hot agar + phenolphthalein + potassium hexacyanoferrate(III) solution

Kuprum
Copper

Paku besi
Iron nail

D



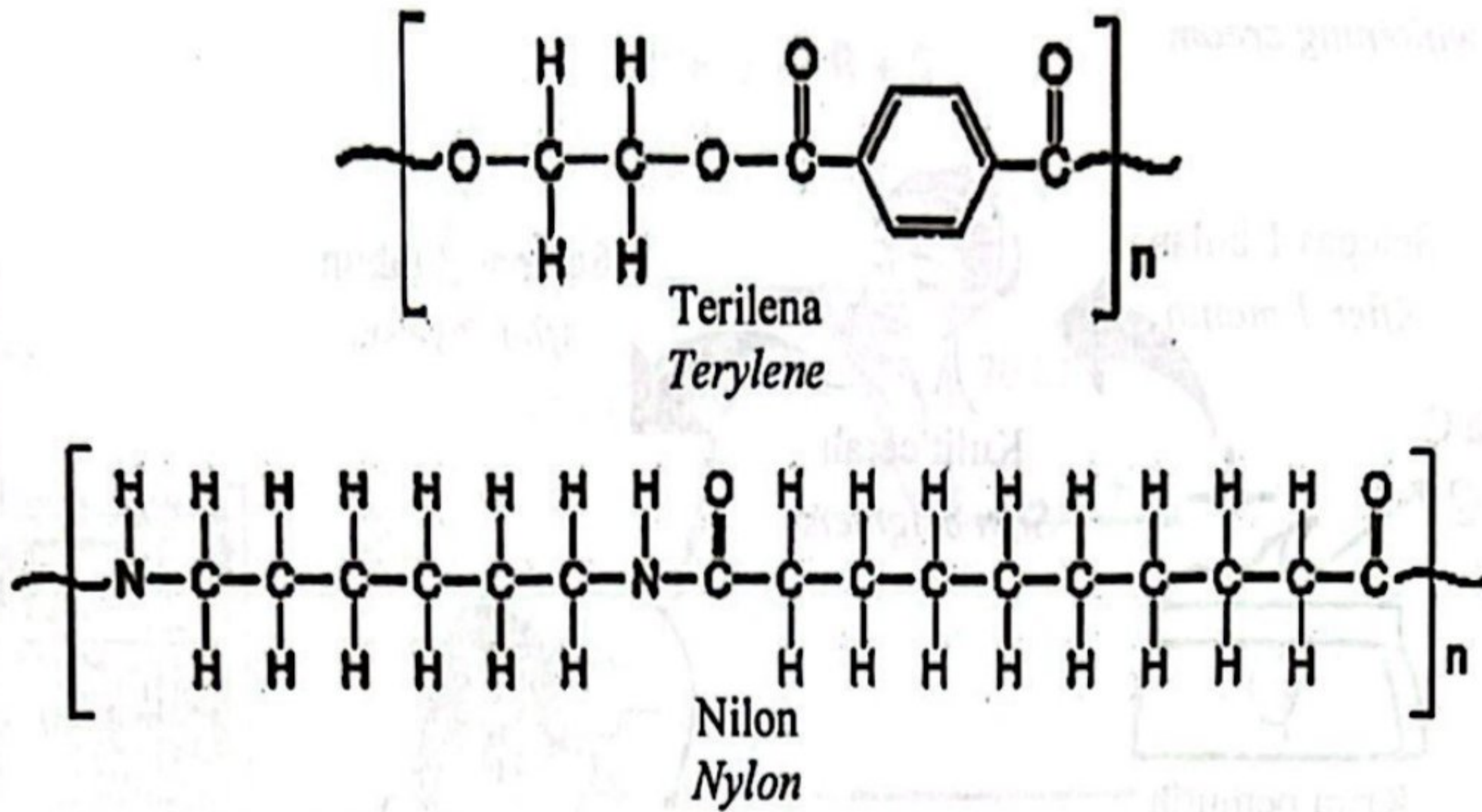
Agar-agar panas + fenolftalein + larutan kalium heksasianoferat(III)
Hot agar + phenolphthalein + potassium hexacyanoferrate(III) solution

Magnesium
Magnesium

Paku besi
Iron nail

28. Rajah 8 menunjukkan dua struktur polimer sintetik.

Diagram 8 shows two structures of synthetic polymers.



Rajah 8/ Diagram 8

Antara berikut, pernyataan manakah benar bagi kedua-dua polimer tersebut?

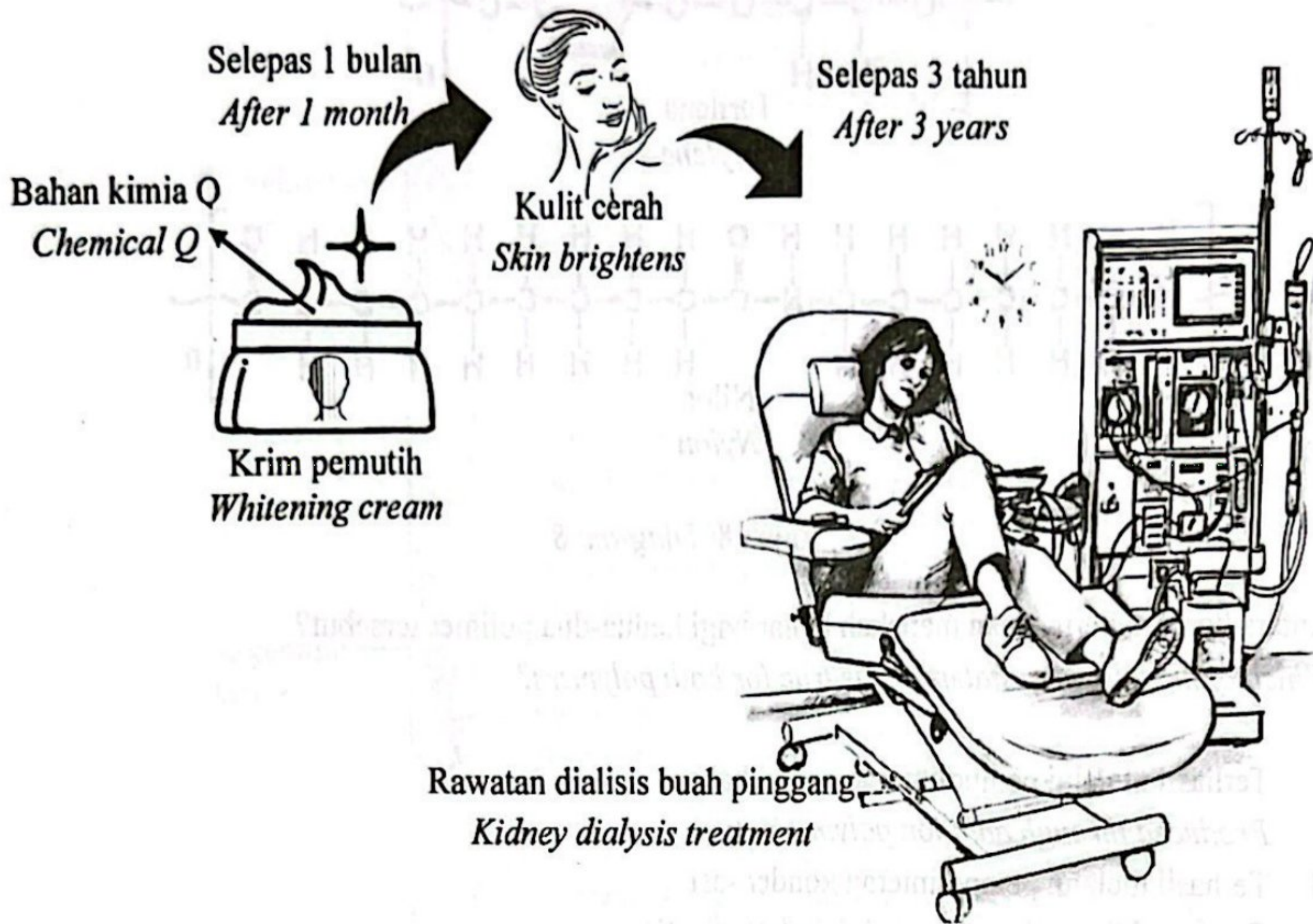
Which of the following statements is true for both polymers?

- I Terhasil melalui pempolimeran penambahan
Produced through addition polymerisation
- II Terhasil melalui pempolimeran kondensasi
Produced through condensation polymerisation
- III Monomer yang terlibat memiliki dua kumpulan berfungsi
The monomers involved consist of two functional group
- IV Monomer yang terlibat terdiri daripada hidrokarbon tak tepu
The monomers involved consist of unsaturated hydrocarbon

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

29. Rajah 9 menunjukkan kesan buruk utama akibat penggunaan bahan kimia terlarang Q dalam produk kecantikan seperti krim pemutih.

Diagram 9 shows the main adverse effects of using harmful chemical Q in beauty products such as whitening cream.



Rajah 9/ Diagram 9

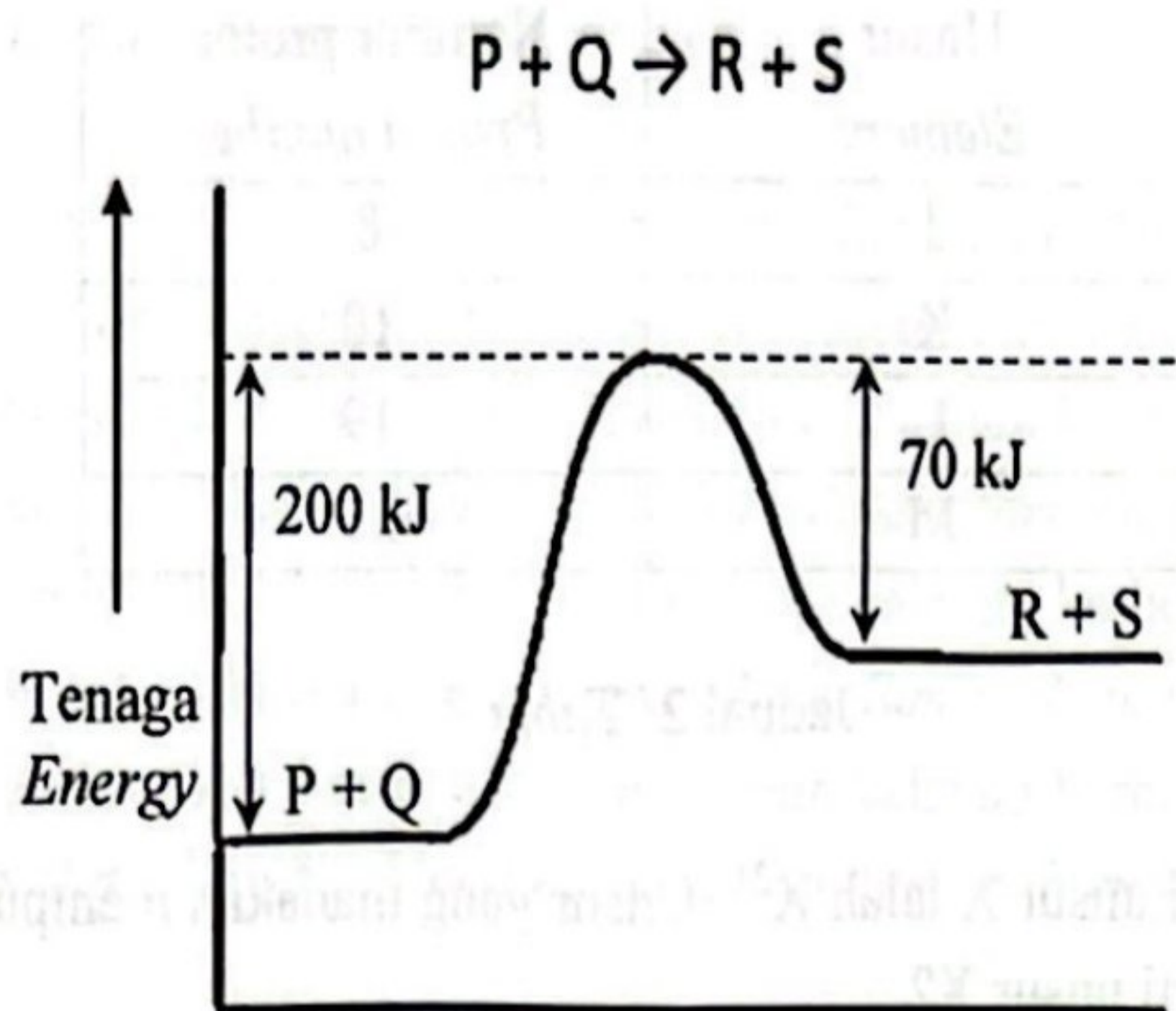
Apakah bahan kimia Q yang terdapat dalam krim pemutih tersebut?

What is the chemical Q found in the whitening cream?

- A Merkuri
Mercury
- B Hidrokuinon
Hydroquinone
- C Betamethasone valerate
Betamethasone valerate

30. Rajah 10 menunjukkan gambar rajah aras tenaga bagi tindak balas kimia berikut.

Diagram 10 shows the energy level diagram of the following chemical reaction.

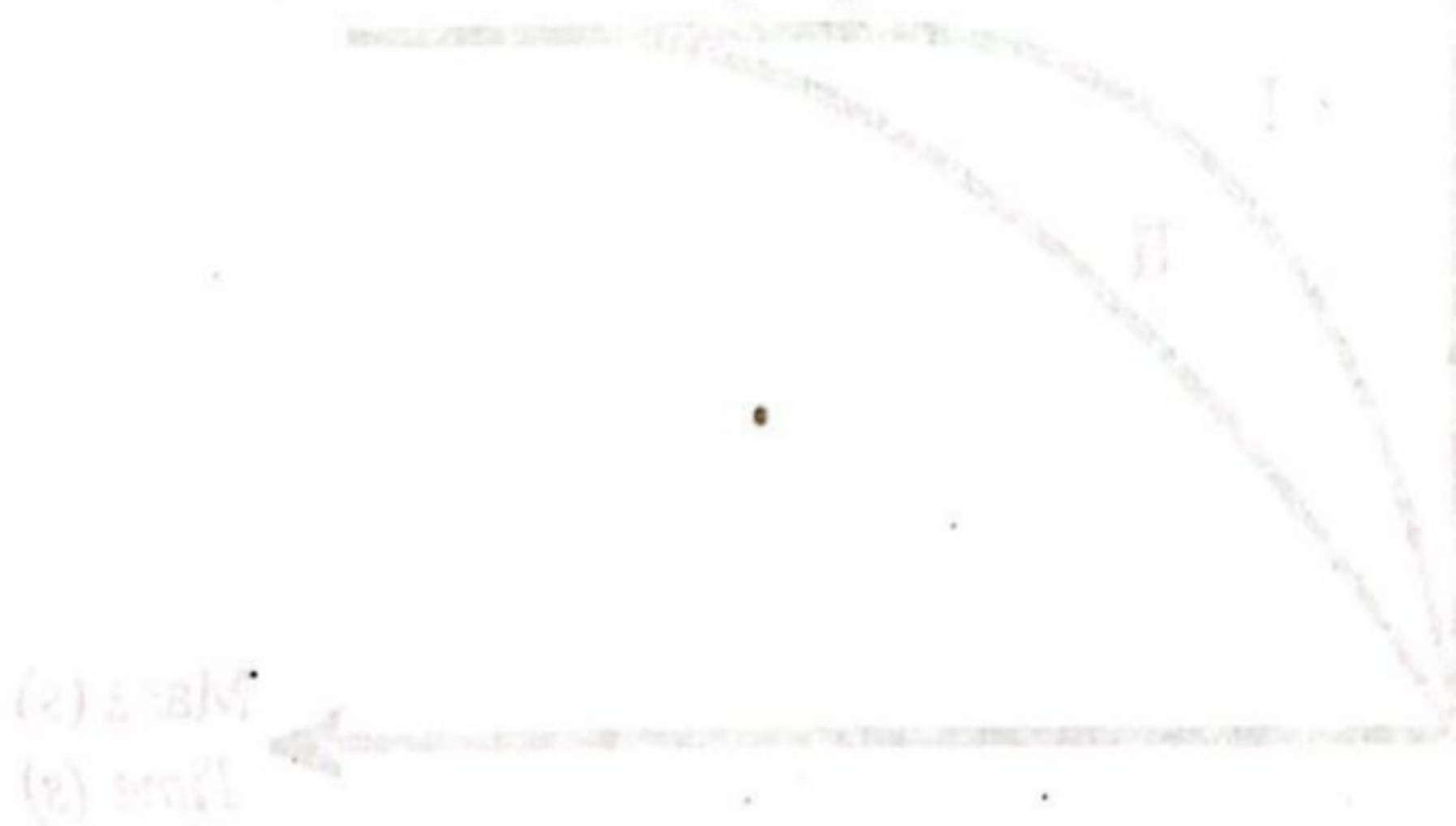


Rajah 10/ Diagram 10

Antara pernyataan berikut, yang manakah benar?

Which of the following statement is true?

- A Haba tindak balas ialah 70 kJ
The heat of reaction is 70 kJ
- B R dan S adalah lebih stabil daripada P dan Q
R and S are more stable than P and Q
- C Tenaga pengaktifan bagi tindak balas ialah 200 kJ
The activation energy of the reaction is 200 kJ
- D Haba dibebaskan apabila P bertindak balas dengan Q untuk menghasilkan R dan S.
Heat is released when P reacts with Q to produce R and S.



31. Jadual 2 menunjukkan nombor proton bagi empat unsur.

Table 2 shows the proton number of four elements.

Unsur <i>Element</i>	Nombor proton <i>Proton number</i>
J	8
K	10
L	19
M	20

Jadual 2/ *Table 2*

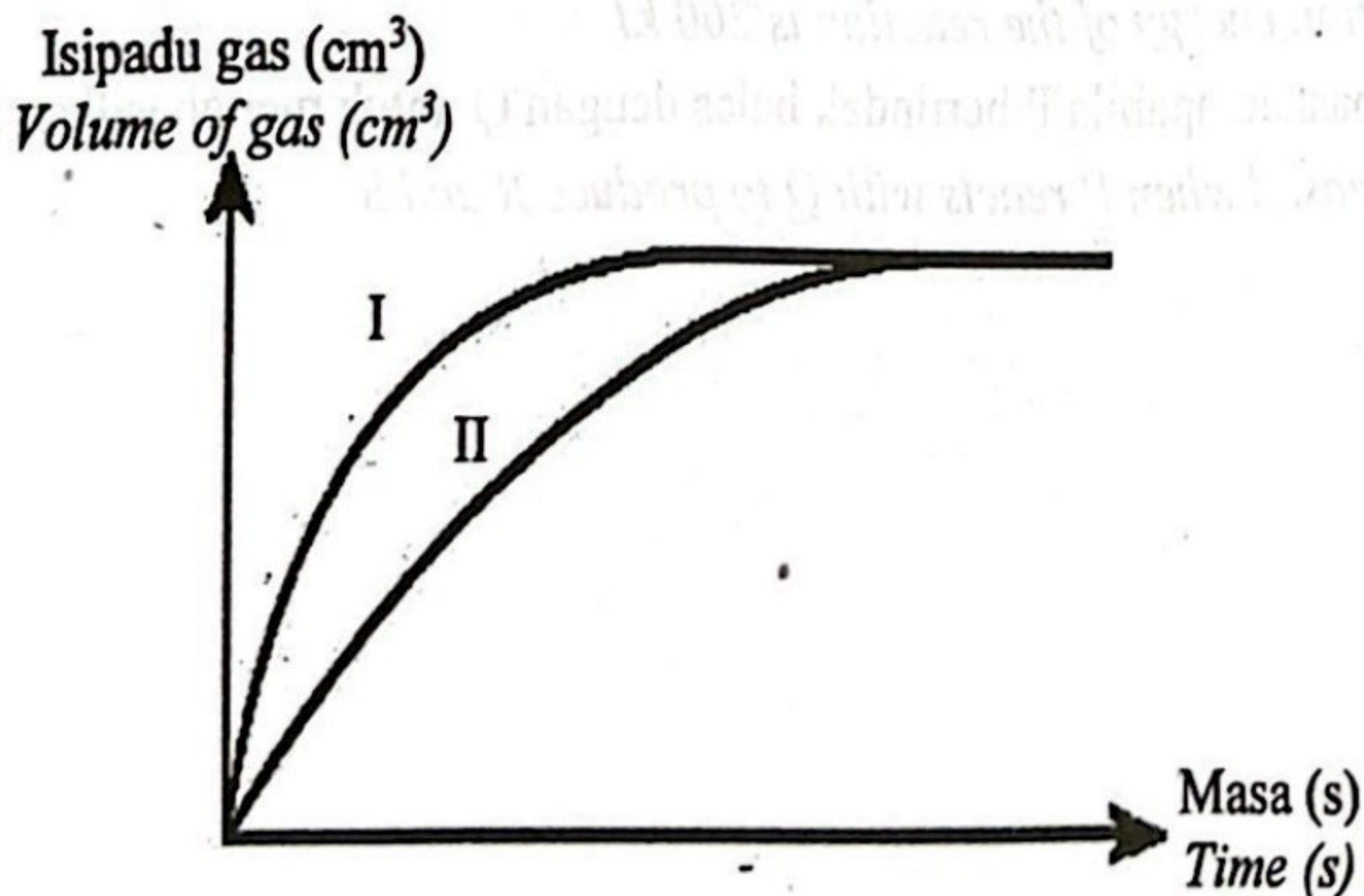
Diberi formula ion bagi unsur X ialah X^{2+} . Unsur yang manakah mempunyai bilangan elektron valens yang sama seperti unsur X?

Given that the ionic formula of element X is X^{2+} . Which element has the same number of valence electron as element X?

- A J
- B K
- C L
- D M

32. Rajah 11 menunjukkan graf isipadu gas melawan masa.

Diagram 11 shows a graph of volume of gas against time.



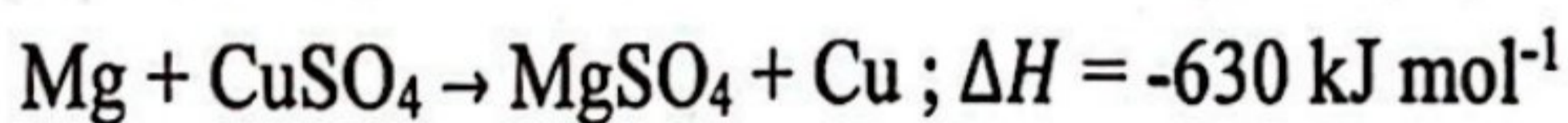
Rajah 11/ *Diagram 11*

Lengkung I terhasil apabila 50 cm^3 asid hidroklorik 1.0 mol dm^{-3} bertindak balas dengan serbuk CaCO_3 . Antara bahan tindak balas berikut, yang manakah menghasilkan Lengkung II?
Curve I produced when 50 cm^3 of 1.0 mol dm^{-3} of hydrochloric acid reacts with CaCO_3 . Which of the following reactants will produces Curve II?

- A 25 cm^3 asid hidroklorik 0.5 mol dm^{-3} dan serbuk kalsium karbonat
 25 cm^3 of 0.5 mol dm^{-3} hydrochloric acid and calcium carbonate powder
- B 25 cm^3 asid hidroklorik 1.0 mol dm^{-3} dan ketulan kalsium karbonat
 25 cm^3 of 1.0 mol dm^{-3} hydrochloric acid and calcium carbonate chips
- C 50 cm^3 asid hidroklorik 1.0 mol dm^{-3} dan ketulan kalsium karbonat
 50 cm^3 of 1.0 mol dm^{-3} hydrochloric acid and calcium carbonate chips
- D 50 cm^3 asid hidroklorik 0.5 mol dm^{-3} dan ketulan kalsium karbonat
 50 cm^3 of 0.5 mol dm^{-3} hydrochloric acid and calcium carbonate chips

33. Persamaan termokimia berikut menunjukkan tindak balas antara magnesium dan larutan kuprum(II) sulfat.

The following thermochemical equation shows the reaction between magnesium and copper(II) sulphate solution.



Hitung perubahan suhu apabila 100 cm^3 larutan kuprum(II) sulfat 0.1 mol dm^{-3} bertindak balas dengan serbuk magnesium berlebihan.

[Muatan haba tentu larutan = $4.2 \text{ J g}^{-1} \text{ }^\circ\text{C}^{-1}$]

Calculate the temperature change when 100 cm^3 of 0.1 mol dm^{-3} copper(II) sulphate solution reacts with excess magnesium powder.

[Specific heat capacity of solution = $4.2 \text{ J g}^{-1} \text{ }^\circ\text{C}^{-1}$]

- A $10 \text{ }^\circ\text{C}$
- B $12 \text{ }^\circ\text{C}$
- C $15 \text{ }^\circ\text{C}$
- D $17 \text{ }^\circ\text{C}$

34. 9.75 g unsur X bertindak balas dengan 63.5 g unsur Y untuk membentuk suatu sebatian yang mempunyai formula XY_2 . Berapakah jisim atom relatif unsur X?

[Diberi jisim atom relatif Y = 127]

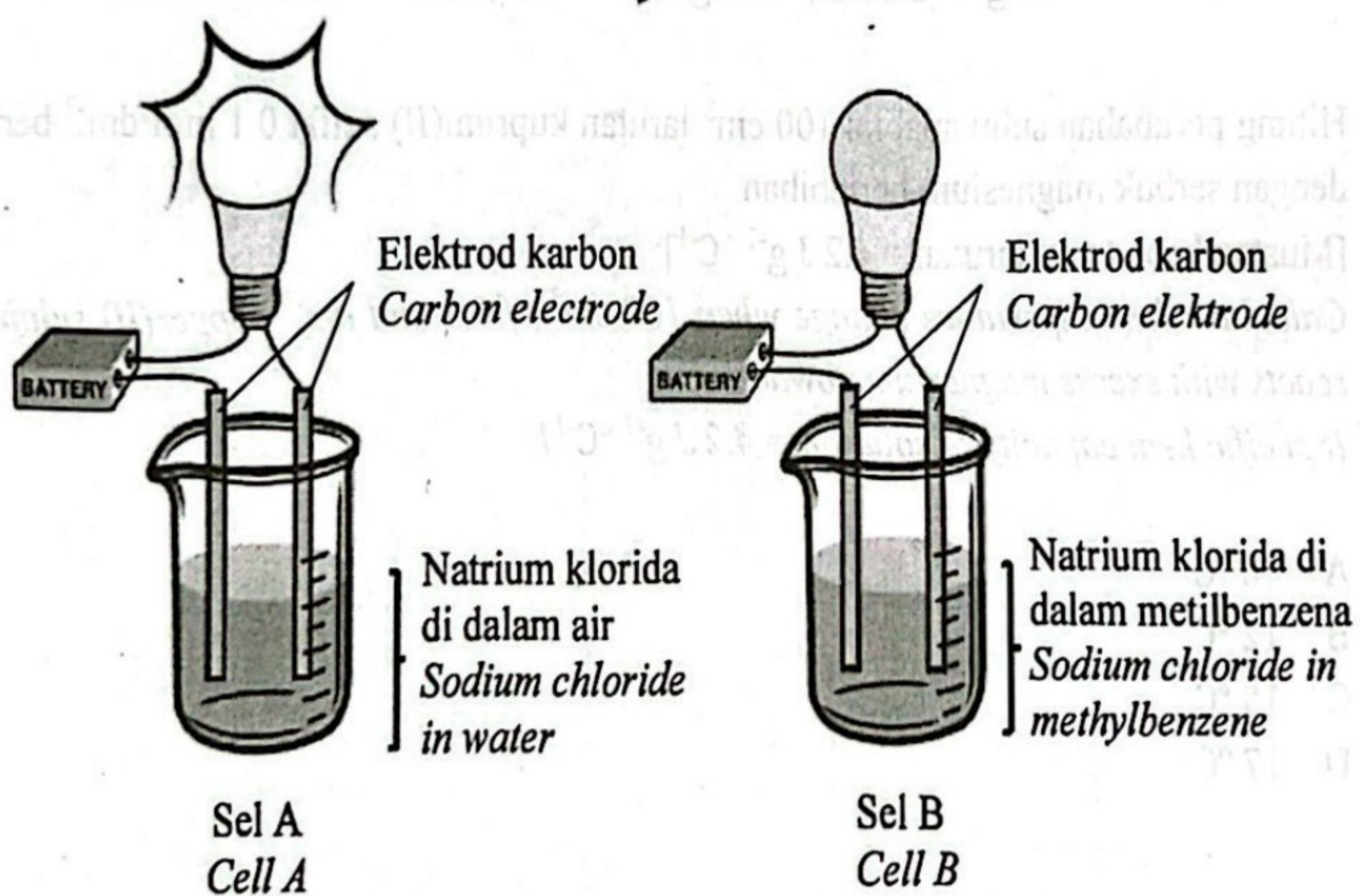
9.75 g of element X reacts with 63.5 g of element Y to form a compound with chemical formula XY_2 . What is the relative atomic mass of element X?

[Given that the relative atomic mass of Y = 127]

- A 23
- B 39
- C 40
- D 88

35. Dua eksperimen dijalankan untuk mengkaji keterlarutan natrium klorida di dalam air dan metilbenzena. Larutan yang terbentuk itu kemudiannya digunakan sebagai elektrolit. Rajah 12 menunjukkan susunan radas untuk menunjukkan kekonduksian elektrik bagi larutan yang terbentuk.

Two experiments are conducted to study the solubility of sodium chloride in water and methylbenzene. The solutions produced are then used as electrolytes. Diagram 12 shows the apparatus set-up of the experiments to show the electrical conductivity of the solutions produced.



Rajah 12/ Diagram 12

Selepas 20 minit, hanya mentol dalam sel A menyala. Antara berikut, yang manakah adalah inferens bagi eksperimen itu?

After 20 minutes, only the bulb in cell A lights up. Which of the following is the inference for the experiment?

- A Natrium klorida wujud sebagai ion di dalam air
Sodium chloride exists as ions in water
- B Natrium klorida wujud sebagai molekul di dalam air
Sodium chloride exists as molecules in water
- C Natrium klorida wujud sebagai ion di dalam metilbenzena
Sodium chloride exists as ions in methylbenzene
- D Natrium klorida wujud sebagai atom di dalam metilbenzena
Sodium chloride exists as atoms in methylbenzene

36. Berapakah isi padu air suling yang perlu ditambah kepada 5.7 g magnesium klorida untuk menghasilkan larutan dengan kepekatan 0.3 mol dm^{-3} ?

[Jisim atom relatif: Mg = 24, Cl = 35.5]

What is the volume of distilled water that needed to be added to 5.7 g of magnesium chloride to obtain a solution with concentration of 0.3 mol dm^{-3} ?

[Relative atomic mass: Mg = 24, Cl = 35.5]

- A 100 cm^3
- B 200 cm^3
- C 250 cm^3
- D 300 cm^3

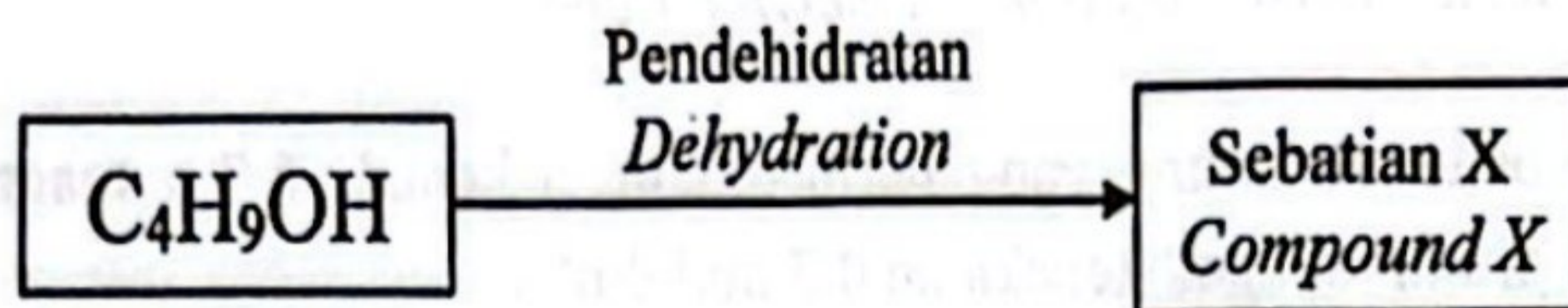
37. Antara berikut, larutan yang manakah menghasilkan gas klorin pada anod dan gas hidrogen pada katod apabila elektrik mengalir melaluinya?

Which of the following solutions produce chlorine gas at the anode and hydrogen gas at the cathode when electricity is passed through it?

- I Asid sulfurik 0.1 mol dm^{-3}
0.1 mol dm⁻³ sulphuric acid
- II Asid hidroklorik 0.1 mol dm^{-3}
0.1 mol dm⁻³ hydrochloric acid
- III Larutan natrium klorida 0.5 mol dm^{-3}
0.5 mol dm⁻³ sodium chloride solution
- IV Larutan kalium nitrat 0.5 mol dm^{-3}
0.5 mol dm⁻³ potassium nitrate solution

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

38. Rajah 13 menunjukkan satu siri perubahan butanol.
Diagram 13 shows a conversion of butanol.



Rajah 13/ *Diagram 13*

Antara yang berikut, yang manakah isomer bagi sebatian X?
Which of the following is the isomer of compound X?

- I But-1-ena
But-1-ene
- II 2-metilpropana
2-methylpropane
- III 2-metilprop-1-ena
2-methylprop-1-ene
- IV 2,2-dimetilbutana
2,2-dimethylbutane

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

39. Jadual 3 menunjukkan sifat oksida bagi unsur M, N, P dan Q.

Table 3 shows the property of oxide of elements M, N, P and Q.

Unsur <i>Element</i>	Sifat oksida <i>Property of oxide</i>
M	Tidak membentuk oksida <i>Does not form oxide</i>
N	Berasid <i>Acidic</i>
P	Amfoterik <i>Amphotheric</i>
Q	Berbes <i>Basic</i>

Jadual 3/ *Table 3*

Antara yang berikut, yang manakah kedudukan yang betul bagi unsur M, N, P dan Q dalam Jadual Berkala Unsur?

Which of the following is the correct position of elements M, N, P and Q in the Periodic Table of Elements?

	Unsur M <i>Element M</i>	Unsur N <i>Element N</i>	Unsur P <i>Element P</i>	Unsur Q <i>Element Q</i>
A	Kumpulan 1 <i>Group 1</i>	Kumpulan 17 <i>Group 17</i>	Kumpulan 13 <i>Group 13</i>	Kumpulan 18 <i>Group 18</i>
B	Kumpulan 13 <i>Group 13</i>	Kumpulan 1 <i>Group 1</i>	Kumpulan 17 <i>Group 17</i>	Kumpulan 18 <i>Group 18</i>
C	Kumpulan 17 <i>Group 17</i>	Kumpulan 18 <i>Group 18</i>	Kumpulan 1 <i>Group 1</i>	Kumpulan 13 <i>Group 13</i>
D	Kumpulan 18 <i>Group 18</i>	Kumpulan 17 <i>Group 17</i>	Kumpulan 13 <i>Group 13</i>	Kumpulan 1 <i>Group 1</i>

40. Jadual 4 menunjukkan haba peneutralan bagi pelbagai tindak balas peneutralan.
 Table 4 shows the heat of neutralisation of various neutralisation reactions.

Eksperimen <i>Experiment</i>	Bahan tindak balas <i>Reactants</i>	Haba peneutralan, ΔH (kJ mol ⁻¹) <i>Heat of neutralisation, ΔH (kJ mol⁻¹)</i>
I	50 cm ³ asid R 1.0 mol dm ⁻³ + 50 cm ³ alkali S 1.0 mol dm ⁻³ <i>50 cm³ of 1.0 mol dm⁻³ of acid R + 50 cm³ of 1.0 mol dm⁻³ of alkali S</i>	-57
II	50 cm ³ asid T 1.0 mol dm ⁻³ + 50 cm ³ alkali S 1.0 mol dm ⁻³ <i>50 cm³ of 1.0 mol dm⁻³ of acid T + 50 cm³ of 1.0 mol dm⁻³ of alkali S</i>	-55
III	50 cm ³ asid R 1.0 mol dm ⁻³ + 50 cm ³ alkali U 1.0 mol dm ⁻³ <i>50 cm³ of 1.0 mol dm⁻³ of acid R + 50 cm³ of 1.0 mol dm⁻³ of alkali U</i>	-52
IV	50 cm ³ asid T 1.0 mol dm ⁻³ + 50 cm ³ alkali U 1.0 mol dm ⁻³ <i>50 cm³ of 1.0 mol dm⁻³ of acid T + 50 cm³ of 1.0 mol dm⁻³ of alkali U</i>	-50

Jadual 4/ Table 4

Antara berikut, yang manakah asid dan alkali yang betul digunakan untuk empat eksperimen tersebut?

Which of the following is the correct acid and alkali used for the four experiments?

	Asid R <i>Acid R</i>	Alkali S <i>Alkali S</i>	Asid T <i>Acid T</i>	Alkali U <i>Alkali U</i>
A	NaOH	HCl	NH ₃	CH ₃ COOH
B	CH ₃ COOH	NH ₃	HCl	NaOH
C	HCl	NaOH	CH ₃ COOH	NH ₃
D	NH ₃	CH ₃ COOH	NaOH	HCl

**KERTAS SOALAN TAMAT
 END OF QUESTION PAPER**