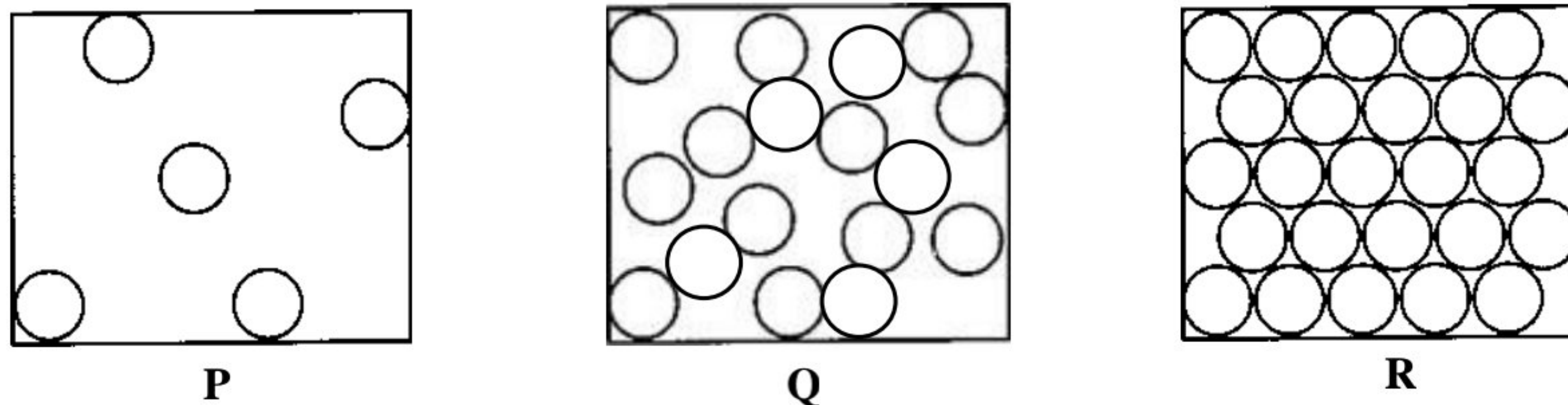


**JAWAB SEMUA SOALAN**  
**ANSWER ALL QUESTIONS**

1. Rajah 1 menunjukkan susunan zarah dalam tiga keadaan jirim pada suhu bilik.  
*Diagram 1 shows the arrangement of particles in three states of matter at room temperature.*



**Rajah 1/Diagram 1**

Apakah bahan P, Q dan R pada suhu bilik?  
*What are substances P, Q and R at room temperature?*

	P	Q	R
A.	Air <i>Water</i>	Glukosa <i>Glucose</i>	Hidrogen <i>Hydrogen</i>
B.	Air <i>Water</i>	Hidrogen <i>Hydrogen</i>	Glukosa <i>Glucose</i>
C.	Glukosa <i>Glucose</i>	Hidrogen <i>Hydrogen</i>	Air <i>Water</i>
D.	Hidrogen <i>Hydrogen</i>	Air <i>Water</i>	Glukosa <i>Glucose</i>

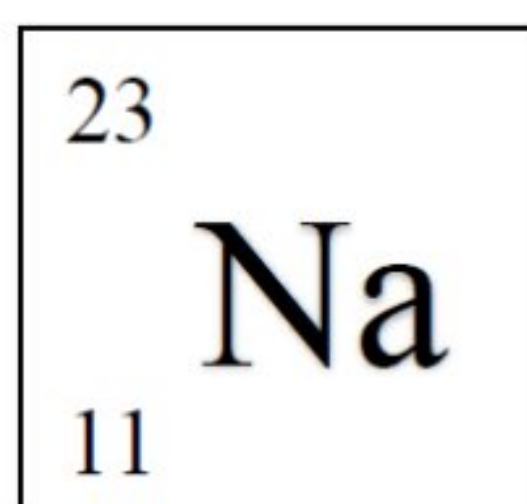
2. Antara yang berikut, yang manakah adalah satu gas monoatom?  
*Which of the following is a monoatomic gas?*

- A. Argon / *Argon*
- B. Klorin / *Chlorine*
- C. Hidrogen / *Hydrogen*
- D. Oksigen / *Oxygen*

3. Formula kimia bagi kuprum(I) oksida ialah  
*Chemical formula of copper(I) oxide is*

- A. CuO
- B. CuO<sub>2</sub>
- C. Cu<sub>2</sub>O
- D. Cu<sub>2</sub>O<sub>2</sub>

4. Rajah menunjukkan perwakilan piawai bagi atom natrium.  
*Diagram shows the standard representation of sodium atom.*

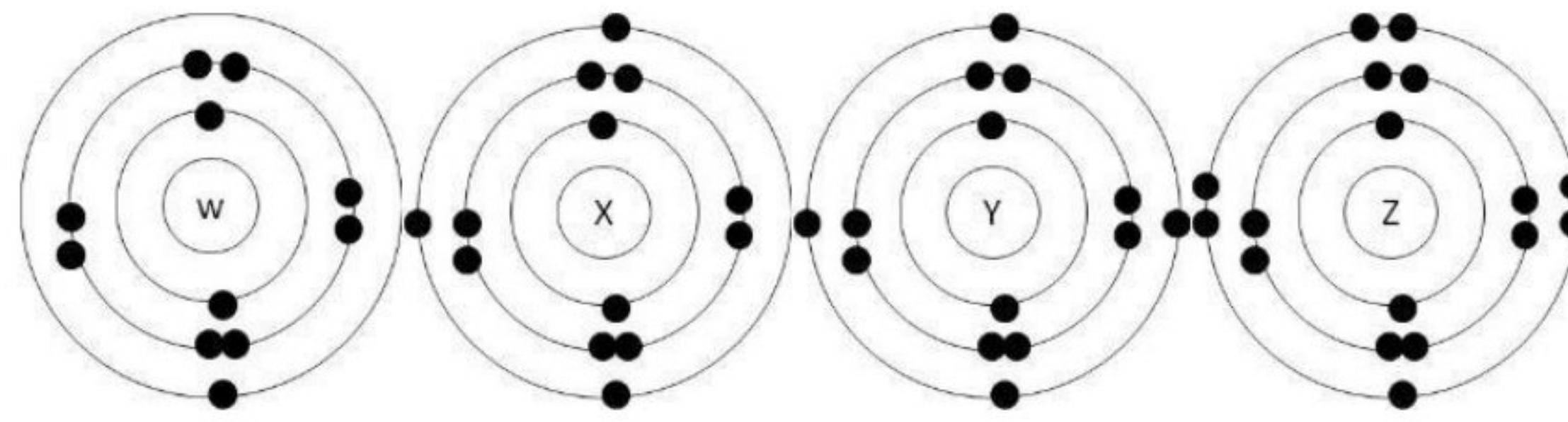


Apakah bilangan elektron valens bagi atom tersebut?  
*What is the number of valence electron of the atom?*

- A. 1  
B. 2  
C. 11  
D. 12
5. Antara yang berikut, yang manakah adalah persamaan isotop bagi unsur?  
*Which of the following are the similarities of isotopes of elements?*
- I Bilangan neutron  
*Number of neutrons*
- II Bilangan proton  
*Number of protons*
- III Sifat fizik  
*Physical properties*
- IV Sifat kimia  
*Chemical properties*
- 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*
6. Antara berikut, pernyataan manakah yang benar tentang perubahan sifat unsur yang berlaku apabila merentasi Kala 3 dalam Jadual Berkala Unsur?  
*Which of the following statements is correct about the changes in properties of elements across Period 3 in the Periodic Table of Element?*
- A. Jejari atom semakin bertambah  
*The atomic radius is increasing*
- B. Keelektronegatifan unsur semakin berkurang  
*The electronegativity of the elements is decreasing*
- C. Daya tarikan nukleus terhadap elektron semakin bertambah  
*Nucleus attraction force to the electron is increasing*
- D. Sifat oksida berubah daripada oksida asid kepada amfoterik kepada oksidabes  
*The properties of oxides change from acidic oxides to amphoteric to base oxides*

7. Rajah 7 menunjukkan susunan elektron bagi atom-atom W, X, Y dan Z. W, X, Y dan Z adalah bukan simbol sebenar bagi unsur-unsur tersebut.

*Diagram 7 shows the electrons arrangements of atoms W, X, Y and Z. W, X, Y, and Z are not the actual symbols of the elements.*



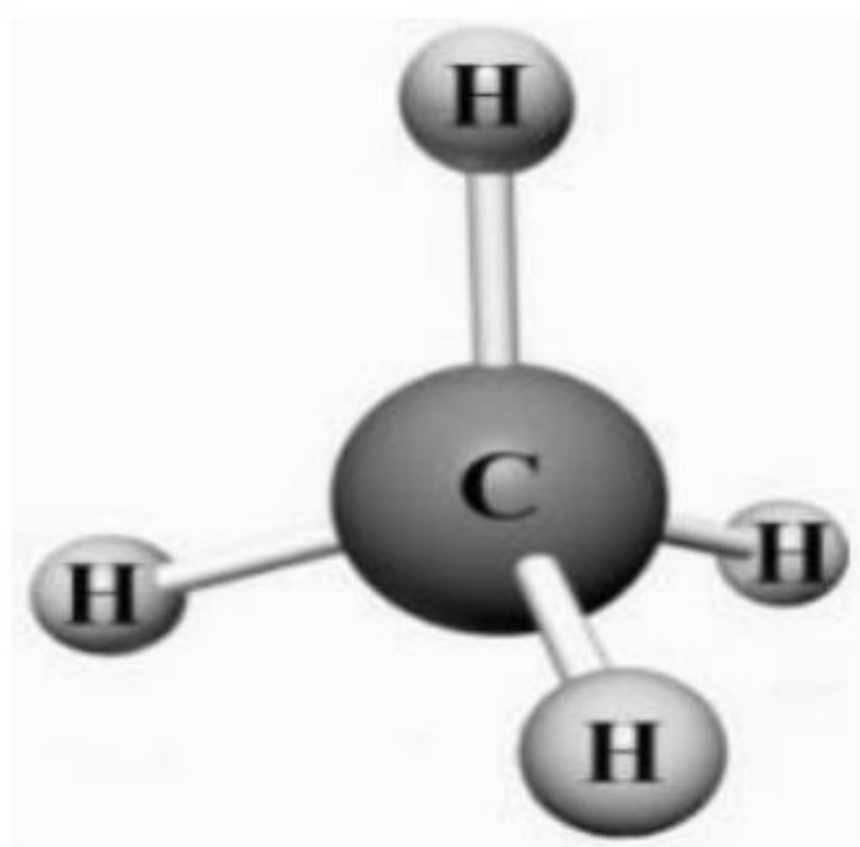
**Rajah 7/ Diagram 7**

Pasangan unsur-unsur manakah yang membentuk suatu sebatian yang tak larut dalam air?  
*Which pair of elements forms a compound that is insoluble in water?*

- A. W dan Z  
*W and Z*
- B. X dan Z  
*X and Z*
- C. W dan Y  
*W and Y*
- D. Y dan Z  
*Y and Z*
8. Antara berikut, yang manakah pasangan sifat fizik yang benar tentang magnesium klorida?  
*Which of the following pair of physical properties is correct about magnesium chloride?*

	<b>Keterlarutan dalam air</b> <i>Solubility in water</i>	<b>Kekonduksian elektrik dalam keadaan leburan</b> <i>Electrical conductivity in molten state</i>
A.	Larut <i>Soluble</i>	Mengkonduksi <i>Conducting</i>
B.	Larut <i>Soluble</i>	Tidak mengkonduksi <i>Not conducting</i>
C.	Tidak larut <i>Insoluble</i>	Mengkonduksi <i>Conducting</i>
D.	Tidak larut <i>Insoluble</i>	Tidak mengkonduksi <i>Not conducting</i>

9. Rajah 9 menunjukkan model atom satu sebatian.  
*Diagram 9 shows the atom model of a compound.*

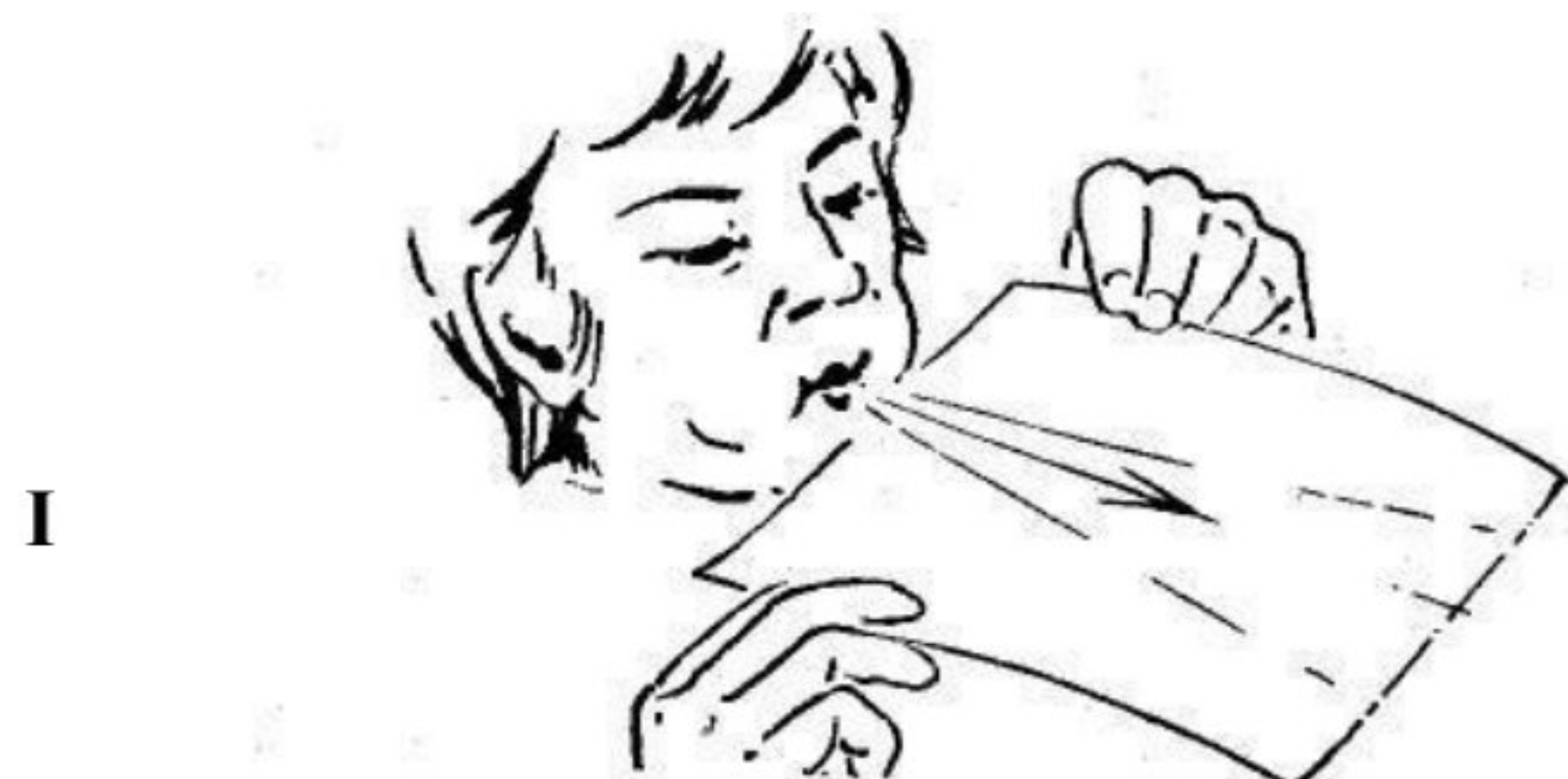


**Rajah 9/ Rajah 9**

Antara berikut, yang manakah sifat sebatian itu?  
*Which of the following is the property of the compound?*

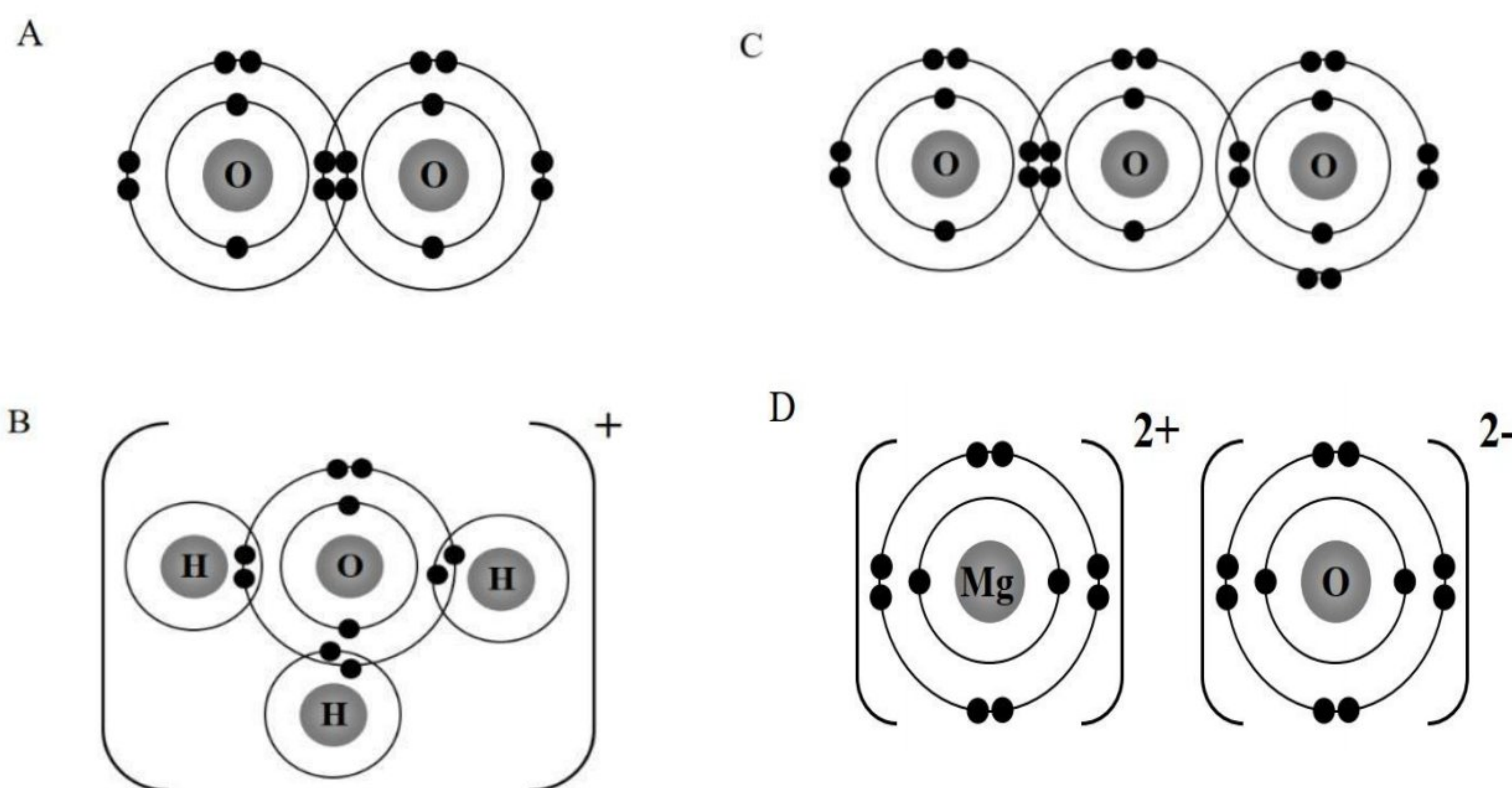
- A. Larut dalam air  
*Dissolves in water*
- B. Larut dalam pelarut organik  
*Dissolve in organic solvent*
- C. Takat lebur dan takat didih yang tinggi  
*High melting and boiling points*
- D. Boleh mengkonduksikan elektrik dalam keadaan leburan  
*Able to conduct electricity in molten state*

10. Antara aktiviti berikut, yang manakah melibatkan pembentukan ikatan hidrogen?  
*Which of the following activities involve formation of hydrogen bond?*



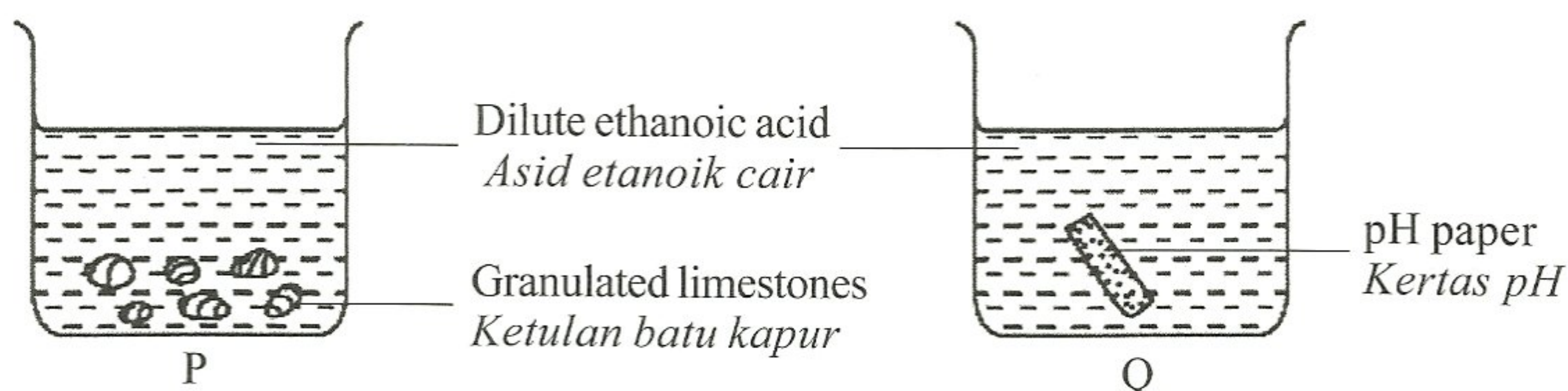
- A. I dan II  
*I and II*
- B. I dan III  
*I and III*
- C. II dan III  
*II and III*
- D. I, II dan III  
*I, II and III*

11. Antara berikut, yang manakah rajah susunan elektron bagi pembentukan sebatian ion?  
Which of the following is the electron arrangement diagram for the formation of ionic compound?



12. Rajah 12 menunjukkan dua bikar, P dan Q yang mengandungi ketulan hatu kapur,  $\text{CaCO}_3$  dan kertas pH masing-masing dalam asid etanoik cair.  
Diagram 12 shows two beakers, P and Q that contain granulated limestones,  $\text{CaCO}_3$  and pH paper respectively in dilute ethanoic acid.

Diagram 12 shows two beakers, P and Q that contain granulated limestones,  $\text{CaCO}_3$  and pH paper respectively in dilute ethanoic acid.



Rajah 12/ Diagram 12

Pemerhatian yang manakah betul  
Which observation is correct?

	P	Q
A.	Gas bubbles released <i>Gelembung gas terbebas</i>	pH value = 1 <i>nilai pH = 1</i>
B.	Gas bubbles released <i>Gelembung gas terbebas</i>	pH value = 4 <i>nilai pH = 4</i>
C.	Solution turns cloudy <i>Larutan menjadi keruh</i>	pH value = 4 <i>nilai pH = 4</i>
D.	No change <i>Tiada perubahan</i>	pH value = 1 <i>nilai pH = 1</i>

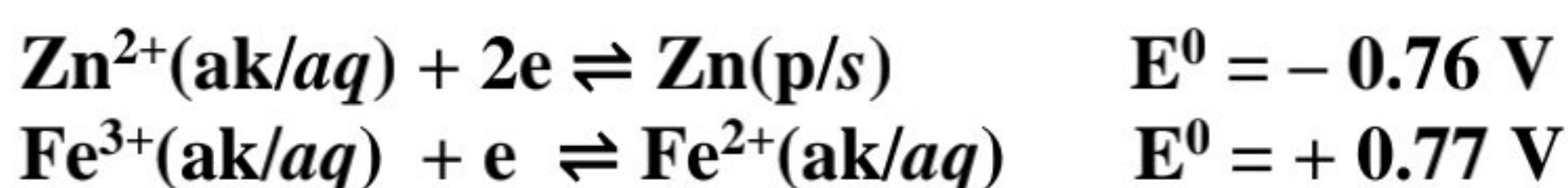
13. Asid manakah yang mengandungi bilangan ion hidrogen yang paling tinggi?  
*Which acid contains the highest number of hydrogen ions?*
- A.  $25 \text{ cm}^3$  asid nitrik  $1 \text{ mol dm}^{-3}$   
 $25 \text{ cm}^3$  of  $1 \text{ mol dm}^{-3}$  nitric acid
- B.  $25 \text{ cm}^3$  asid etanoik  $1 \text{ mol dm}^{-3}$   
 $25 \text{ cm}^3$  of  $1 \text{ mol dm}^{-3}$  ethanoic acid
- C.  $25 \text{ cm}^3$  asid sulfurik  $1 \text{ mol dm}^{-3}$   
 $25 \text{ cm}^3$  of  $1 \text{ mol dm}^{-3}$  sulphuric acid
- D.  $25 \text{ cm}^3$  asid hidroklorik  $1 \text{ mol dm}^{-3}$   
 $25 \text{ cm}^3$  of  $1 \text{ mol dm}^{-3}$  hydrochloric acid
14. Kation manakah yang membentuk kekat dengan sabun?  
*Which cation forms scum with soap?*
- A.  $\text{Na}^+$
- B.  $\text{Mg}^{2+}$
- C.  $\text{Al}^{3+}$
- D.  $\text{NH}_4^+$
15. Yang manakah menerangkan maksud perlanggaran berkesan?  
*Which of the following explains the meaning of effective collision?*
- A. Perlanggaran yang menyebabkan tindak balas  
*The collision that cause reaction*
- B. Perlanggaran yang berlaku semasa tindak balas  
*The collision occur during reaction*
- C. Tenaga perlanggaran yang kurang dari tenaga pengaktifan  
*Collision energy that less than the activation energy*
- D. Perlanggaran yang mempunyai tenaga pengaktifan paling tinggi  
*The collision that has the highest activation energy*
16. Persamaan berikut mewakili tindak balas antara kalsium karbonat dan asid hidroklorik  
*The following equation represents the reaction between calcium carbonate and hydrochloric acid*
- $$\text{CaCO}_3(\text{s}) + 2 \text{HCl}(\text{aq}) \rightarrow \text{CaCl}_2(\text{s}) + \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$$
- Antara faktor berikut, yang manakah boleh meningkatkan kadar tindak balas ini?  
*Which of the following factors can increase the rate of this reaction.*
- A. Meningkatkan saiz kalsium karbonat  
*Increase the size of calcium carbonate*
- B. Meningkatkan suhu campuran  
*Increase the temperature of the mixture*
- C. Mengurangkan isipadu asid hidroklorik  
*Decrease the volume of hydrochloric acid*
- D. Mengurangkan kepekatan asid hidroklorik  
*Decrease the concentration of hydrochloric acid*

17. Antara berikut, yang manakah betul tentang sabun?

*Which of the following is correct about soap?*

- I Bahagian hidrofobik sabun larut dalam gris  
*The hydrophobic part of soap dissolves in grease*
  - II Sabun membentuk kekat dalam air lembut  
*Soap form scum in soft water*
  - III Sabun disediakan melalui hidrolisis lemak dalam keadaan alkali  
*Soap is prepared through the hydrolysis of fats in alkaline conditions*
  - IV Sabun mengurangkan kebolehan air untuk membasahi permukaan kain  
*Soap reduces the ability of water to wet the surface of cloth*
- 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*

18. Nilai keupayaan elektrod piawai,  $E^0$  bagi tindak balas sel setengah diberikan seperti dibawah.  
*The standard electrode potential,  $E^0$  for half-cell equations are given below.*



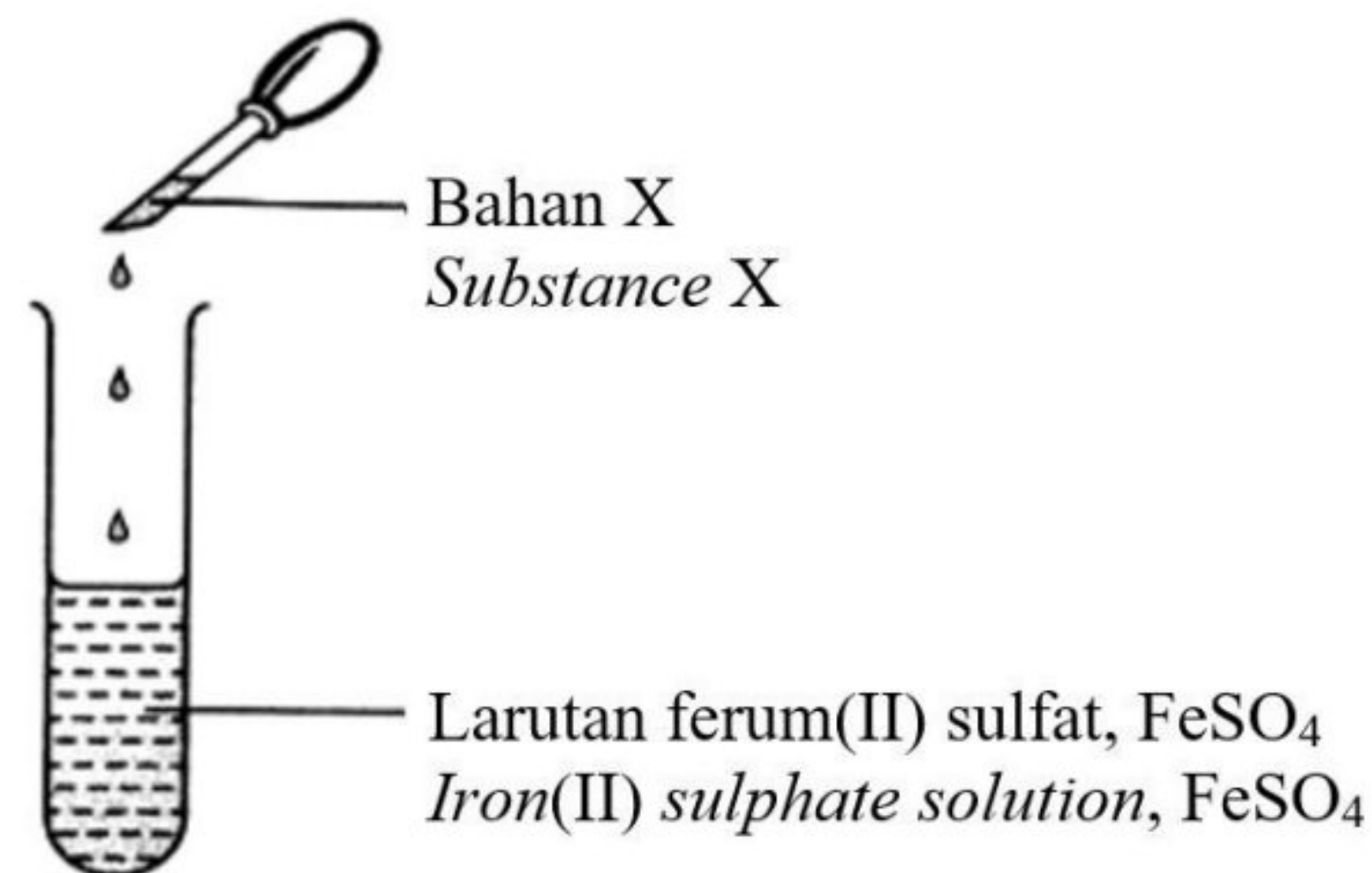
Apakah yang dapat disimpulkan daripada maklumat yang diberikan?  
*What can be deduced from the given information?*

- A. Nombor pengoksidaan bagi ferum, Fe meningkat dari +2 kepada +3  
*The oxidation for ferum, Fe increases from +2 to +3*
  - B. Ion ferum(III),  $\text{Fe}^{3+}$  bertindak sebagai agen penurunan  
*Iron(III) ion,  $\text{Fe}^{3+}$  act as reducing agent*
  - C. Ion zink,  $\text{Zn}^{2+}$  lebih mudah menerima elektron  
*Zinc ion,  $\text{Zn}^{2+}$  is easier to receive electron*
  - D. Atom zink, Zn mengalami pengoksidaan  
*Zinc atom, Zn undergoes oxidation*
19. Apakah hasil-hasil yang terbentuk apabila etanol terbakar dengan lengkap dalam udara berlebihan?  
*What are the products formed when ethanol burns completely in excess air?*
- A. Air dan gas karbon dioksida  
*Water and carbon dioxide gas*
  - B. Air, karbon dan gas karbon dioksida  
*Water, carbon and carbon dioxide gas*
  - C. Air, gas karbon monoksida dan gas karbon dioksida  
*Water, carbon monoxide and carbon dioxide*
  - D. Air, karbon, gas karbon monoksida dan gas karbon dioksida  
*water, carbon, carbon monoxide gas and carbon dioxide gas*



20. Rajah 20 menunjukkan susunan radas suatu eksperimen untuk mengkaji pertukaran ionferum(II),  $\text{Fe}^{2+}$  kepada ion ferum(III),  $\text{Fe}^{3+}$ .

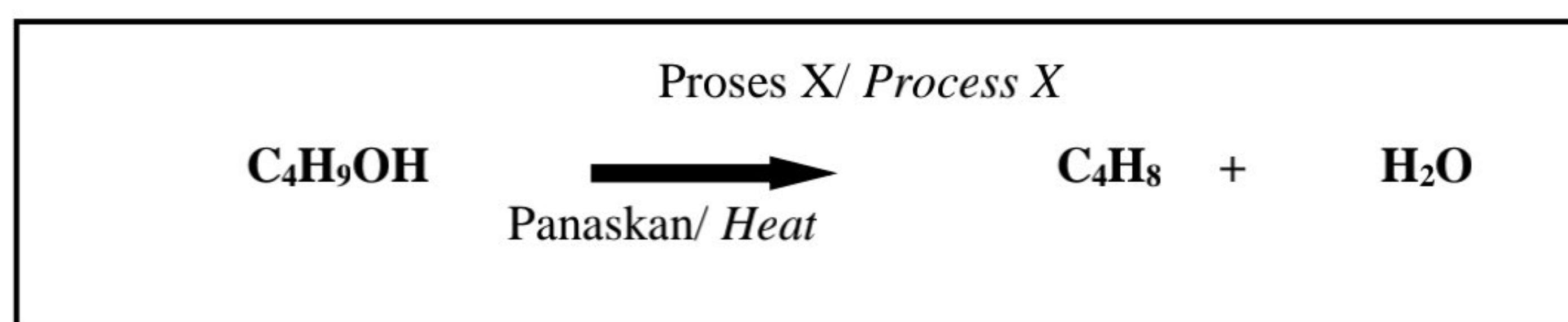
Diagram 20 shows an apparatus set-up of an experiment to study the conversion of iron(II)ion,  $\text{Fe}^{2+}$  to iron(III) ion,  $\text{Fe}^{3+}$ .



Rajah 20/ Diagram 20

Bahan manakah yang boleh digunakan sebagai bahan X?  
Which substance can be used as substance X?

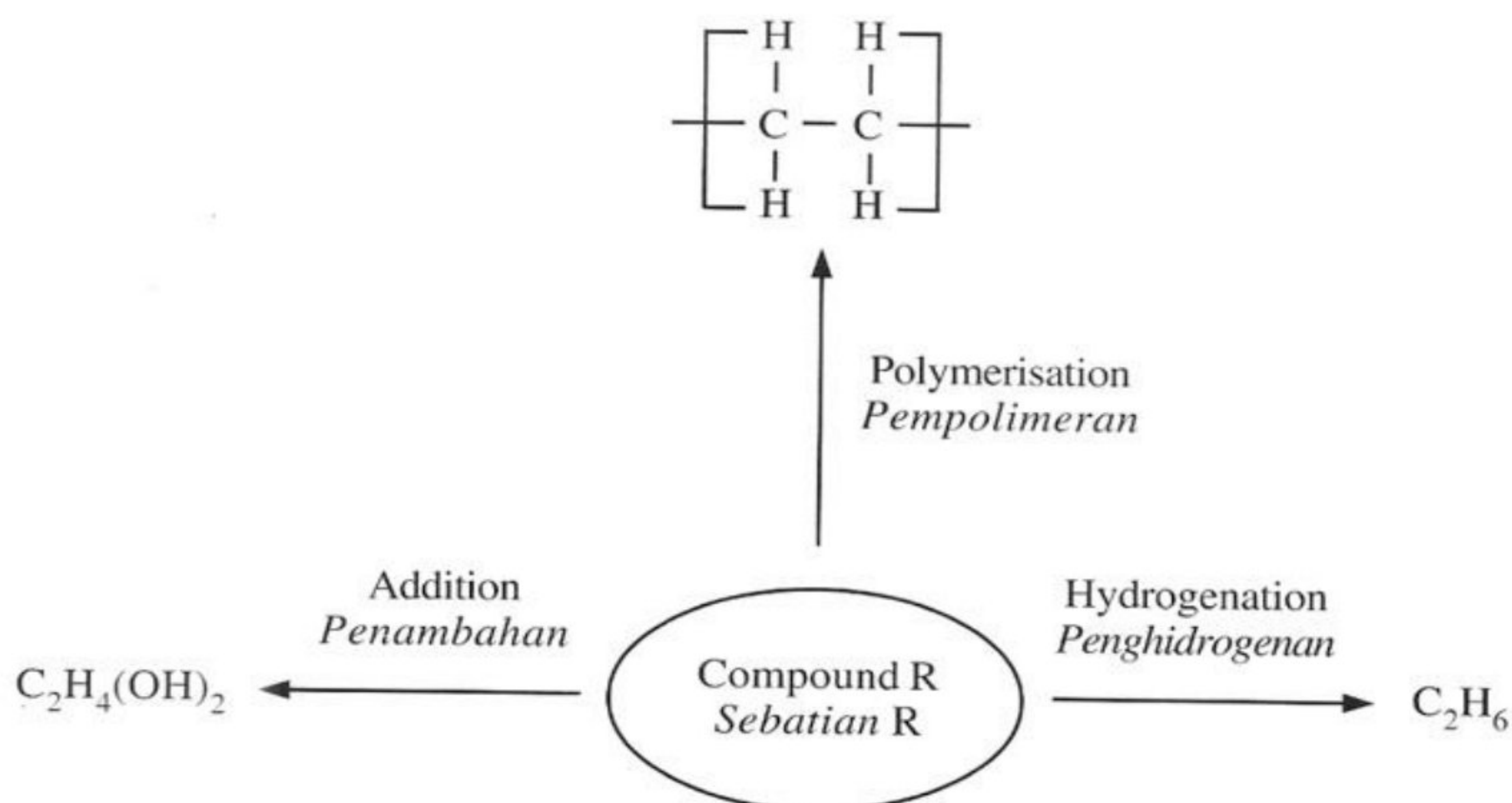
- A. Air klorin,  $\text{Cl}_2$   
Chlorine water,  $\text{Cl}_2$
  - B. Larutan kalium iodida, KI  
Potassium chloride, KI solution
  - C. Larutan kalium nitrat,  $\text{KNO}_3$   
Potassium nitrate,  $\text{KNO}_3$  solution
  - D. Larutan natrium klorida, NaCl  
Sodium chloride, NaCl solution
21. Persamaan berikut menunjukkan penukaran butanol kepada butena.  
The following equation shows the conversion of butanol to butene.



Apakah proses X?  
What is process X?

- A. Pengoksidaan  
Oxidation
- B. Hidrolisis  
Hydrolysis
- C. Pengdehidratan  
Dehydration
- D. Penghidrogenan  
Hydrogenation

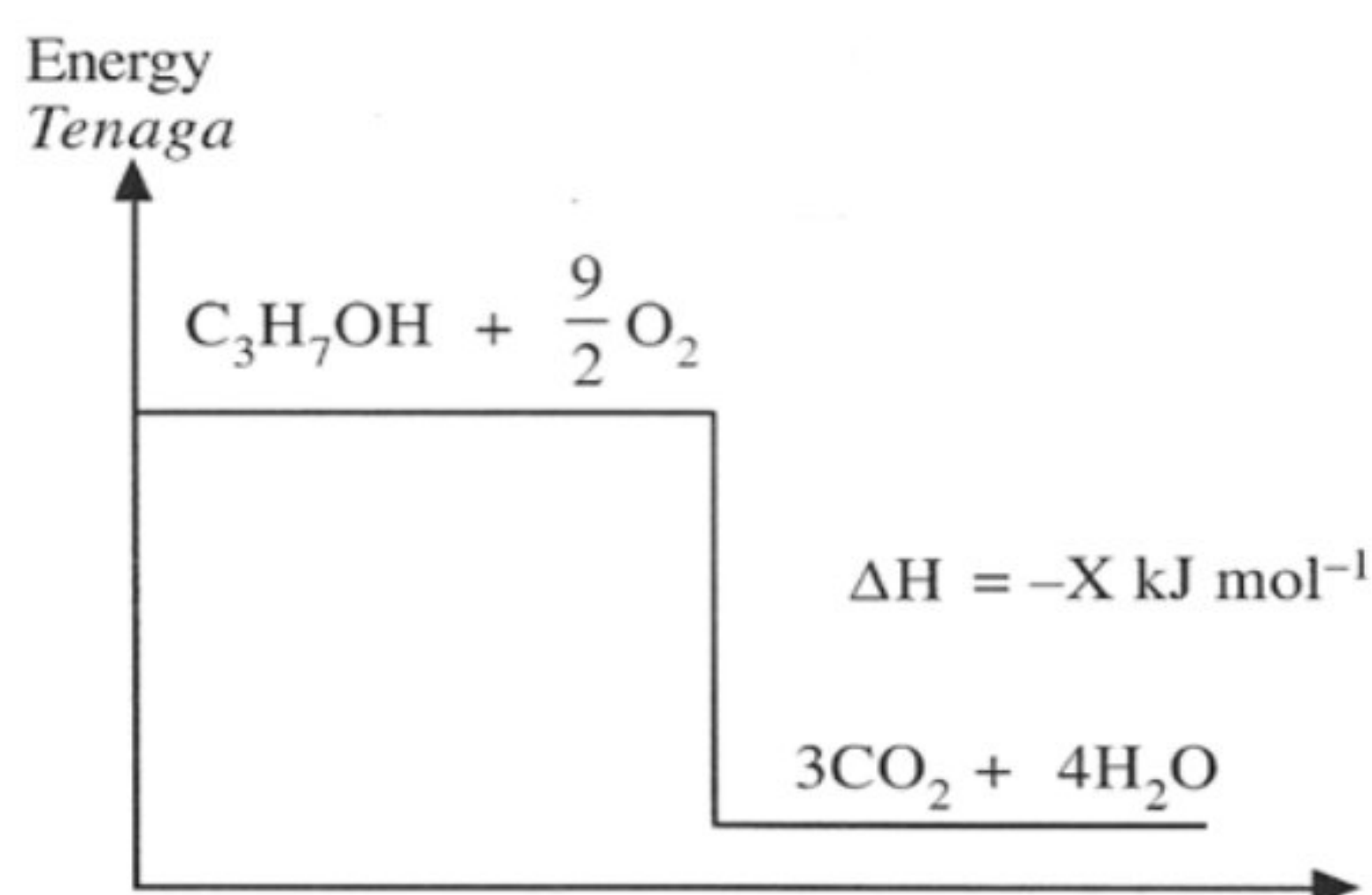
22. Rajah 22 menunjukkan carta alir bagi tindak balas sebatian R  
Diagram 22 shows a flow chart for the reactions of compound R.



Rajah 22/ Diagram 22

Apakah formula am bagi R?  
What is the general formula of R?

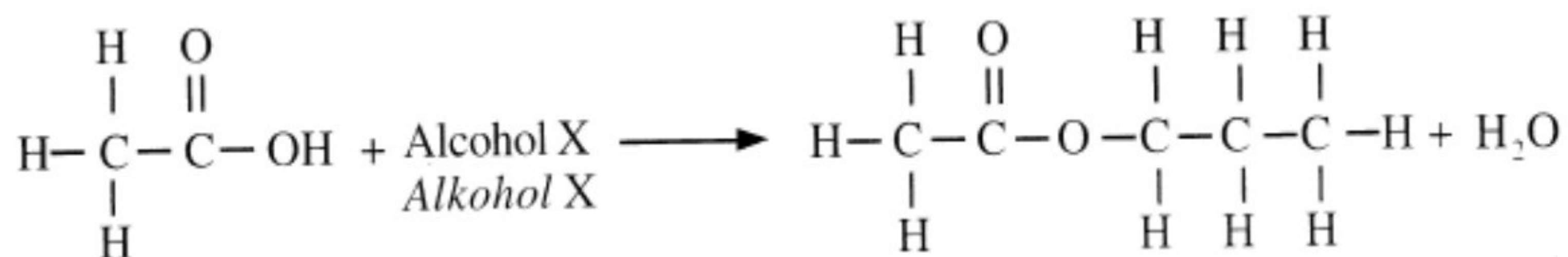
- A.  $\text{C}_n\text{H}_{2n}$   
 B.  $\text{C}_n\text{H}_{2n+2}$   
 C.  $\text{C}_n\text{H}_{2n+1}\text{OH}$   
 D.  $\text{C}_n\text{H}_{2n+1}\text{COOH}$
23. Rajah 23 menunjukkan gambar rajah aras tenaga bagi pembakaran propan-1-ol  
Diagram 23 shows the energy level diagram for the combustion of propan-1-ol.



Rajah 23/ Diagram 23

- A. X kJ haba diserap untuk tindak balas tersebut  
X kJ of heat is absorbed for the reaction
- B. Suhu akhir adalah lebih rendah daripada suhu awal  
The final temperature is lower than the initial temperature
- C. Haba pembakaran propan-1-ol ialah -X kJ mol<sup>-1</sup>  
The heat of combustion of propan-1-ol is -X kJ mol<sup>-1</sup>
- D. Jumlah kandungan tenaga hasil tindak balas adalah lebih tinggi daripada bahan tindak balas  
The total energy content of products is higher than the reactants

24. Persamaan mewakili satu tindak balas pengesteran  
*The equation represents an esterification reaction.*



Apakah X?  
*What is X?*

- A. 
$$\begin{array}{c} \text{H} \quad \text{H} \quad \text{OH} \\ | \quad | \quad | \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{H} \\ | \quad | \quad | \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$$
- B. 
$$\begin{array}{c} \text{H} \quad \text{H} \\ | \quad | \\ \text{H}-\text{C}-\text{C}-\text{OH} \\ | \quad | \\ \text{H} \quad \text{H} \end{array}$$
- C. 
$$\begin{array}{c} \text{H} \quad \text{OH} \quad \text{H} \quad \text{H} \quad \text{H} \\ | \quad | \quad | \quad | \quad | \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{C}-\text{OH} \\ | \quad | \quad | \quad | \quad | \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$$
- D. 
$$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ | \quad | \quad | \quad | \quad | \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\ | \quad | \quad | \quad | \quad | \\ \text{H} \quad \text{H} \quad \text{OH} \quad \text{H} \quad \text{H} \end{array}$$

25. Rajah 25 menunjukkan struktur bagi polimer Q.  
*Diagram 25 shows the structure of polymer Q.*

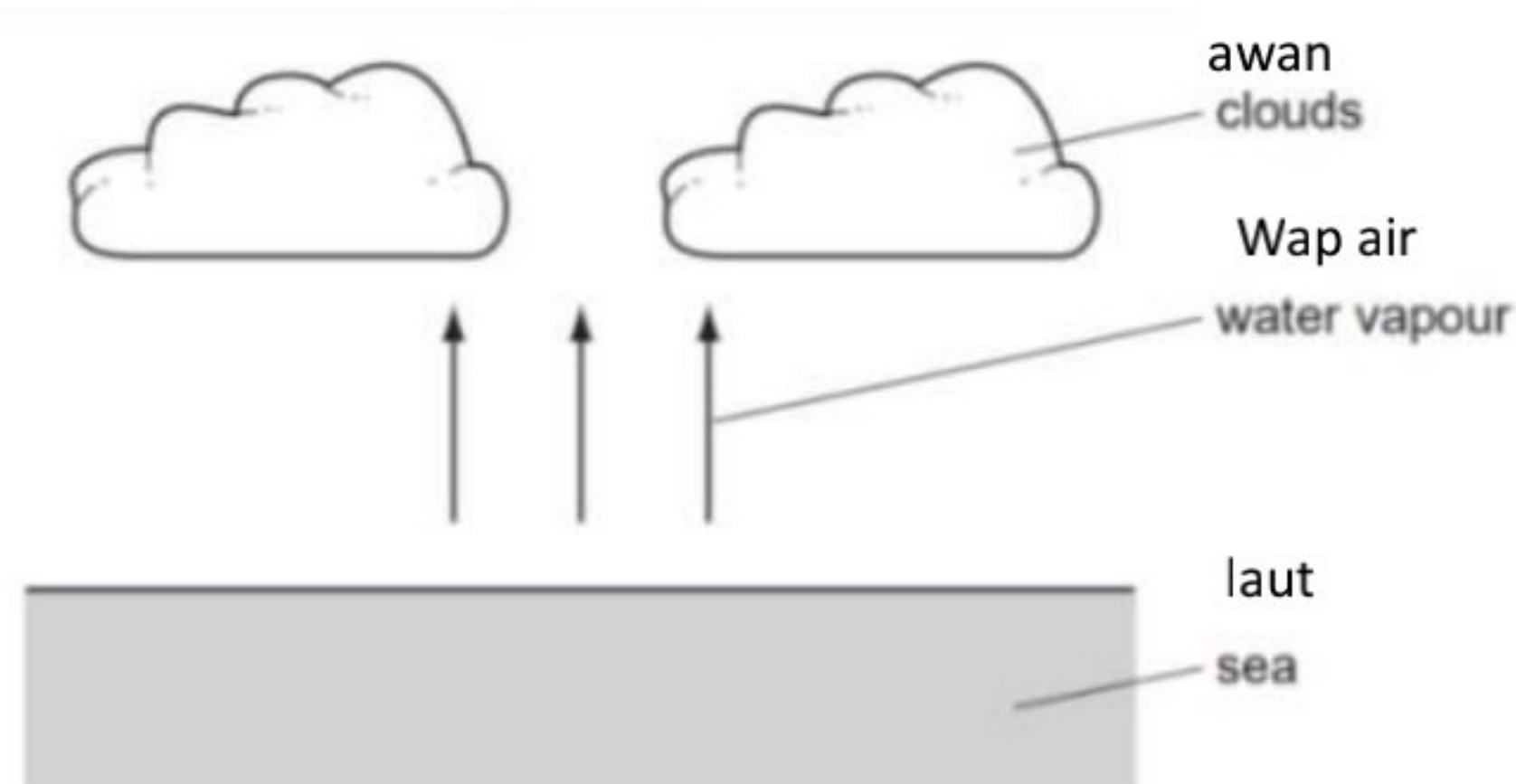


Rajah 25/ Diagram 25

Antara berikut, yang manakah sifat bagi polimer Q?  
*Which of the following is a property of polymer Q?*

- A. Terurai atau hangus apabila dipanaskan dan tidak dapat dikitar semula  
*Disintegrate or burn upon heating and cannot be recycled*
- B. Dapat diacu berulang kali selepas dipanaskan dan boleh dikitar semula  
*Can be repeatedly remoulded upon heating and can be recycled*
- C. Dapat diregang dan kembali kepada bentuk asal selepas dilepaskan  
*Can be stretched and can return to their original shape when released*

26. Rajah 26 menunjukkan kejadian awan yang terbentuk apabila wap air tersejat dari laut.  
Diagram 26 shows the formation of clouds when water vapour evaporates from the sea.



Rajah 26/ Diagram 26

Apakah perubahan tenaga haba dan jenis tindak balas yang terlibat ketika air menyejat?  
What is the heat energy change and the type of reaction occur when water evaporates?

	<b>Perubahan tenaga haba</b> <i>Heat energy change</i>	<b>Jenis tindak balas</b> <i>Type of reaction</i>
<b>A.</b>	Tenaga haba dibebaskan <i>Heat energy given out</i>	Endotermik <i>Endothermic</i>
<b>B.</b>	Tenaga haba dibebaskan <i>Heat energy given out</i>	Eksotermik <i>Exothermic</i>
<b>C.</b>	Tenaga haba diserap <i>Heat energy absorb</i>	Endotermik <i>Endothermic</i>
<b>D.</b>	Tenaga haba diserap <i>Heat energy absorb</i>	Eksotermik <i>Exothermic</i>

27. *Plaster of paris* atau plaster gipsum sering digunakan untuk merawat pesakit yang mengalami kecederaan pada tulang. Ia terdiri daripada serbuk putih halus kalsium sulfat hemihidrat,  $(\text{CaSO}_4)_2 \cdot \text{H}_2\text{O}$ . Berapakah jisim molar kalsium sulfat hemihidrat?  
[Jisim atom relatif: Ca = 40; S = 32; O = 16; H = 1]

*Plaster of paris or gypsum plaster is often used to treat patients with bone injuries. It consists of a fine white powder of calcium sulphate hemihydrate,  $(\text{CaSO}_4)_2 \cdot \text{H}_2\text{O}$ . What is the molar mass of calcium sulphate hemihydrate?*

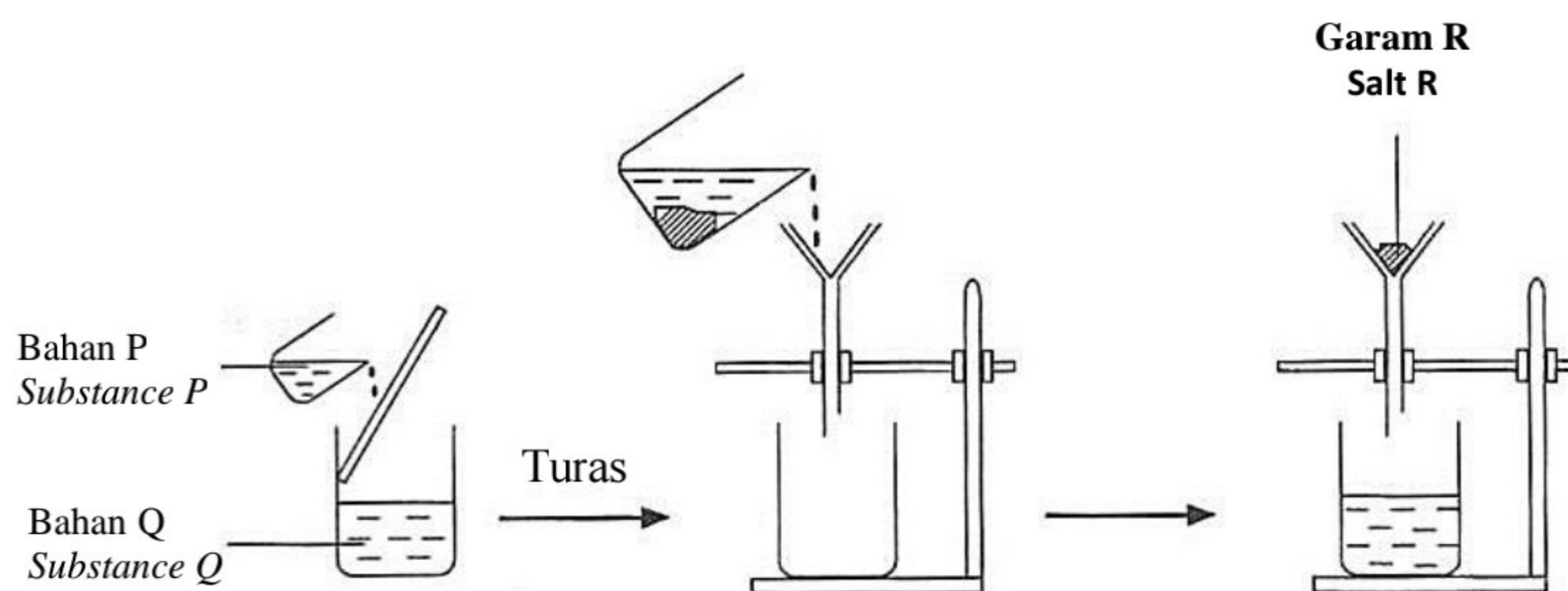
[Relative atomic mass: Ca = 40; S = 32; O = 16; H = 1]

- A.** 154  
**B.** 272  
**C.** 208  
**D.** 290
28. Sebatian manakah adalah hidrokarbon tak tepu?  
Which compound is an unsaturated hydrocarbon?

- A.**  $\text{CH}_3\text{CHCH}_3\text{CH}_3$   
**B.**  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$   
**C.**  $\text{CH}_2\text{CHCH}_2\text{CH}_2\text{CH}_3$   
**D.**  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$



32. Rajah 32 menunjukkan susunan radas untuk menyediakan suatu garam.  
Diagram 32 shows the apparatus set-up to prepare a salt.



Rajah 32/ Diagram 32

Padanan manakah betul?  
Which of the following is correct?

	<b>Bahan P</b> <i>Substance P</i>	<b>Bahan Q</b> <i>Substance Q</i>	<b>Garam R</b> <i>Salt R</i>
<b>A.</b>	Magnesium nitrat <i>Magnesium nitrate</i>	Kalsium sulfat <i>Calcium sulphate</i>	Magnesium sulfat <i>Magnesium sulphate</i>
<b>B.</b>	Barium nitrat <i>Barium nitrate</i>	Natrium sulfat <i>Sodium sulphate</i>	Barium sulfat <i>Barium sulphate</i>
<b>C.</b>	Kalium sulfat <i>Potassium sulphate</i>	Argentum nitrat <i>Silver nitrate</i>	Kalium nitrat <i>Potassium nitrate</i>
<b>D.</b>	Asid sulfurik <i>Sulphuric acid</i>	Larutan natrium hidroksida <i>Sodium hydroxide solution</i>	Natrium sulfat <i>Sodium sulphate</i>

33. Semasa perintah kawalan pergerakan (PKP) baru-baru ini, Anas menghabiskan masanya dengan memakan banyak makanan rapu sambil menonton televisyen. Pada suatu hari, Anas rasa teramat sakit pada bahagian abdomennya dan terus ke klinik untuk mendapatkan rawatan. Anas perlu minum segelas 'Barium meal' sebelum doktor melakukan X-ray pada bahagian abdomennya. 'Barium meal' ini diperbuat daripada garam barium sulfat di mana garam ini membantu imej usus kelihatan jelas pada filem X-ray.  
Antara yang berikut, larutan yang manakah sesuai digunakan untuk menentusahkan kehadiran anion dalam garam tersebut?

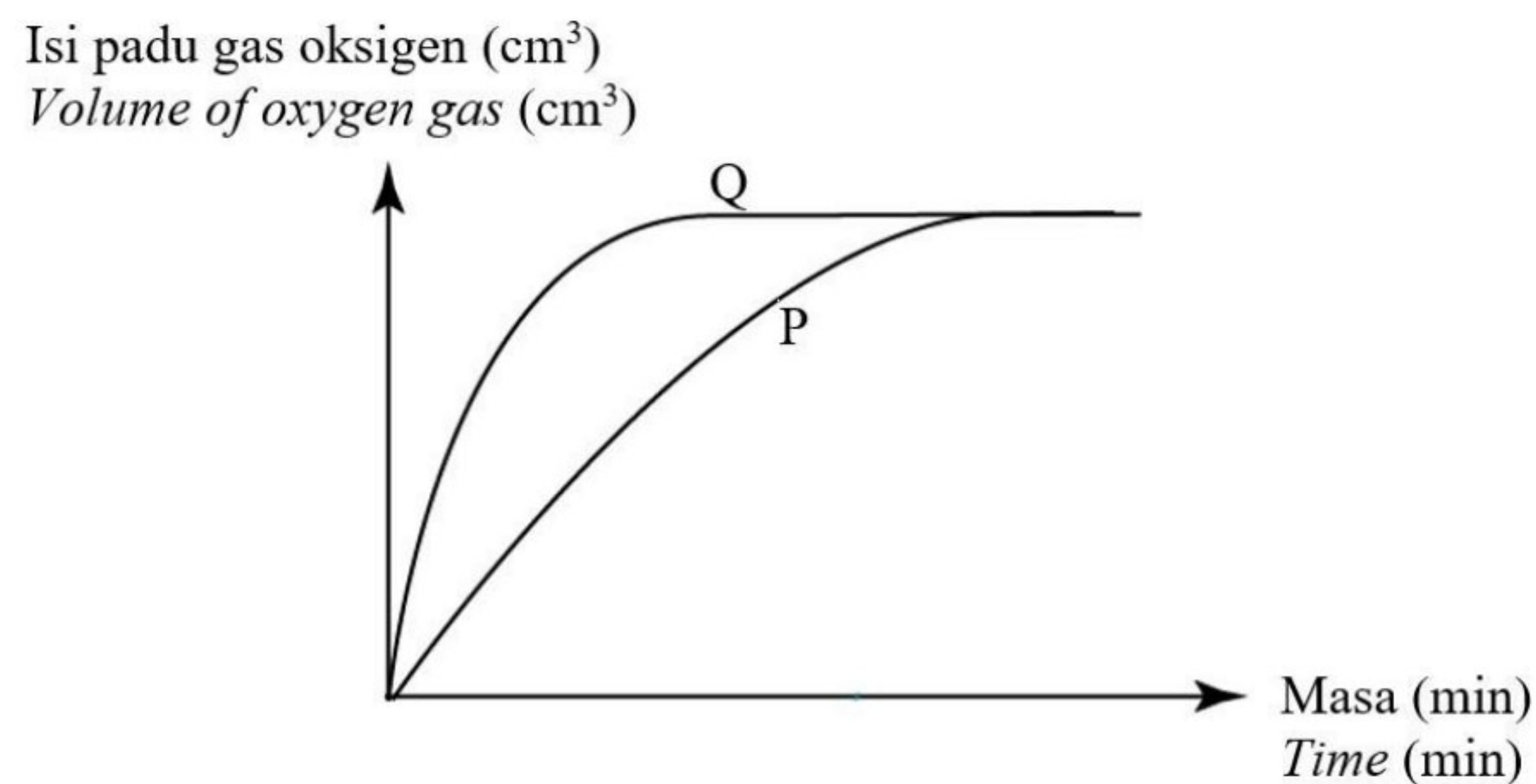
*During movement control order (MCO) recently, Ahmad spent most of his time eating a lot of junk foods while watching television. One day, he felt excruciating abdominal pain and rushed to a clinic for treatment. Ahmad needed to drink a glass of Barium meal before the doctor ran an X-ray on his abdomen. A barium meal is made of barium sulphate salt which helps the image of intestines appear on X-ray films clearly.*

*Which of the following solutions are suitable to verify the presence of anion in that salt?*

- I Asid hidroklorik  
*Hydrochloric acid*
- II Asid sulfurik  
*Sulphuric acid*
- III Larutan barium klorida  
*Barium chloride solution*
- IV Larutan natrium sulfat  
*Sodium sulphate solution*

- 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

34. Rajah 34 menunjukkan lengkung P dan lengkung Q yang diperoleh bagi penguraian larutan hidrogen peroksida dengan kehadiran suatu mangkin.  
*Diagram 34 shows the curve P and Q obtained for decomposition of hydrogen peroxide solution in the presence of a catalyst.*



Rajah 34/ Diagram 34

Lengkung P terhasil dengan menggunakan 50 cm<sup>3</sup> larutan hidrogen peroksida 1.0 mol dm<sup>-3</sup> pada suhu 21 °C.

*Curve P is obtained by using 50 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> of hydrogen peroxide solution at temperature 21 °C.*

Antara berikut, yang manakah dapat menghasilkan lengkung Q?

*Which of the following would obtain curve Q?*

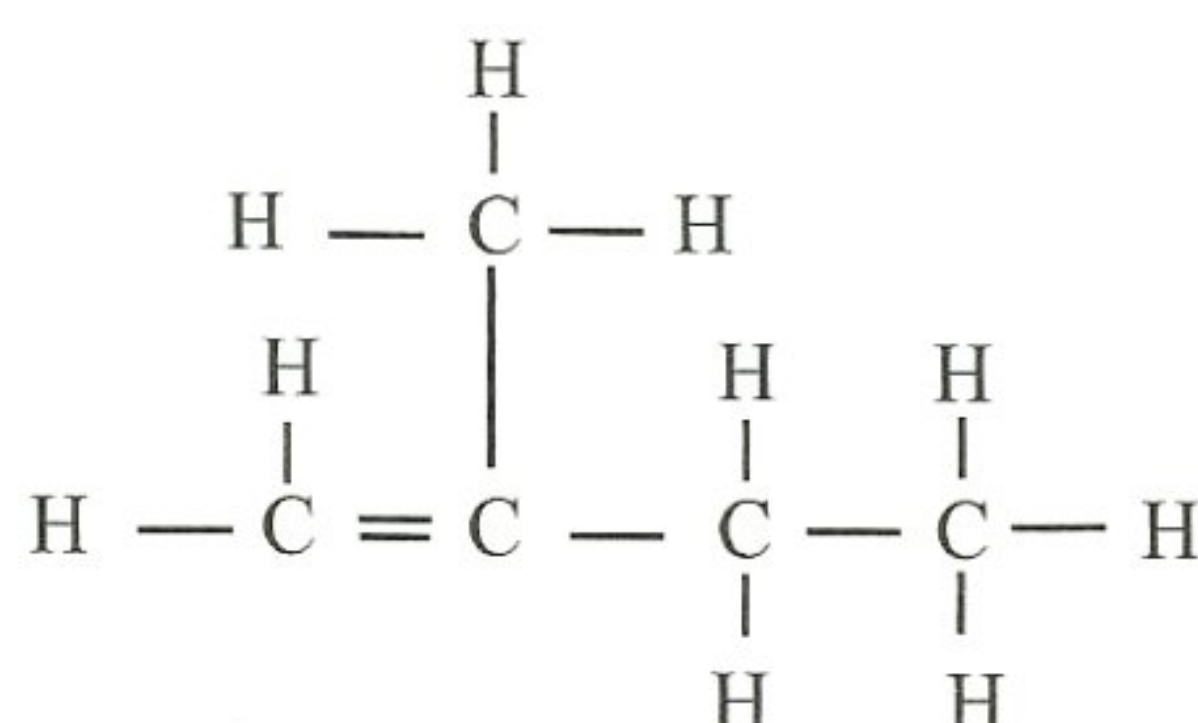
	Hidrogen peroksida <i>Hydrogen peroxide</i>		Suhu (°C) <i>Temperature (°C)</i>
	Isipadu (cm <sup>3</sup> ) <i>Volume (cm<sup>3</sup>)</i>	Kepekatan (mol dm <sup>-3</sup> ) <i>Concentration (mol dm<sup>-3</sup>)</i>	
A.	25	0.5	30
B.	25	1.0	25
C.	50	0.5	25
D.	50	1.0	30

35. Seorang pelajar ingin menyediakan gas hidrogen di dalam makmal melalui tindak balas antara pita magnesium dan asid hidroklorik. Langkah-langkah manakah mesti diambil untuk memendekkan masa pengumpulan gas itu?

*A student wants to prepare hydrogen gas in the laboratory through the reaction between magnesium ribbon and hydrochloric acid. Which steps must be taken to shorten the time to collect the gas?*

- I Menambahkan air kepada asid hidroklorik  
*Adding water to hydrochloric acid*
- II Menggunakan kelalang kon yang lebih besar untuk larutan tersebut  
*Using a larger conical flask for the solution*
- III Menggantikan pita magnesium dengan serbuk magnesium  
*Replacing magnesium ribbon with magnesium powder*
- IV Menambahkan beberapa titis larutan kuprum(II) sulfat kepada campuran bahan tindak balas  
*Adding a few drops of copper(II) sulphate solution to the mixture of the reactants*
- A. I and II  
*I dan II*
- B. I and IV  
*I dan IV*
- C. II and III  
*II dan III*
- D. III and IV  
*III dan IV*

36. Rajah 36 menunjukkan formula struktur suatu sebatian organik  
*Diagram 36 shows the structural formula of an organic compound.*



**Rajah 36/ Diagram 36**

Apakah nama IUPAC bagi sebatian organik itu?  
*What is the IUPAC name of the organic compound?*

- A. 2-metilbut-1-ena  
*2-methylbut-1-ene*
- B. 2-metilbut-2-ena  
*2-methylbut-2-ene*
- C. 2-etilbut-3-ena  
*2-ethylbut-3-ene*
- D. 3-metilbut-3-ena  
*3-methylbut-3-ene*



37. Persamaan berikut mewakili tindak balas pengoksidaan antara etanol dan kalium dikromat(VI) berasid.

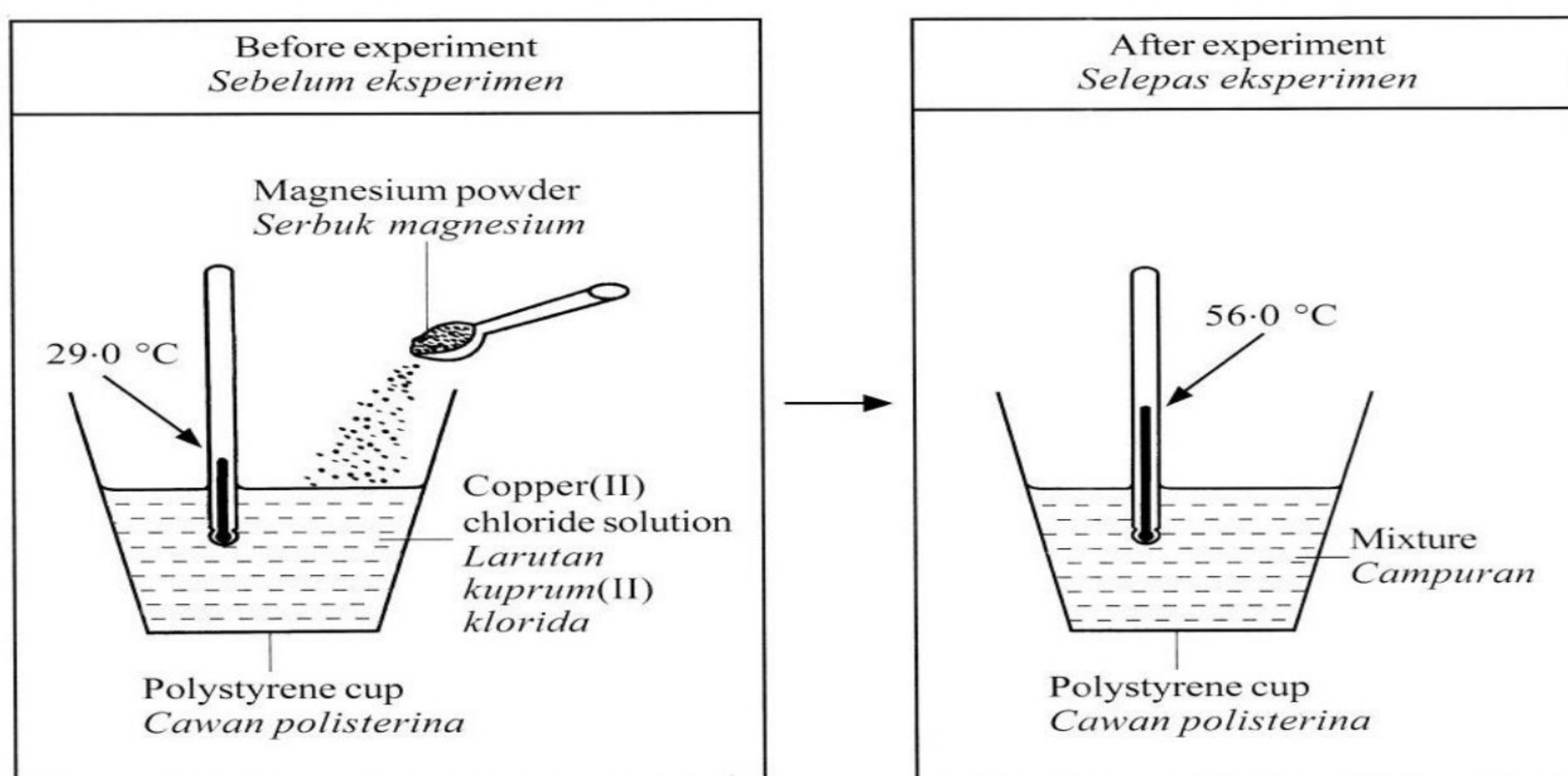
*The following equation represents the oxidation reaction between ethanol and acidified potassium dichromate(VI).*



Apakah perubahan nombor pengoksidaan bagi kromium?

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

- A. +2 kepada +6  
+2 to +6
- B. +3 kepada +6  
+3 to +6
- C. +6 kepada +2  
+6 to +2
- D. +6 kepada +3  
+6 to +3
38. Rajah 38 menunjukkan bacaan termometer apabila serbuk magnesium berlebihan ditambah kepada 50 cm<sup>3</sup> larutan kuprum(II) nitrat 0.5 mol dm<sup>-3</sup> dalam suatu cawan polistirena.  
*Diagram 38 shows the thermometer readings when excess magnesium powder is added into 50 cm<sup>3</sup> of 0.5 mol dm<sup>-3</sup> copper(II) nitrate solution in a polystyrene cup*



Rajah 38/ Diagram 38

Berapakah haba penyesaran bagi tindak balas ini?

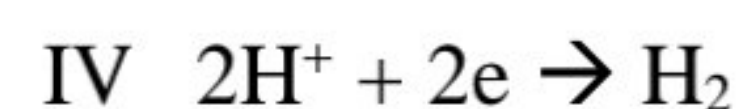
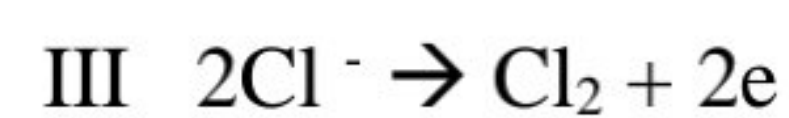
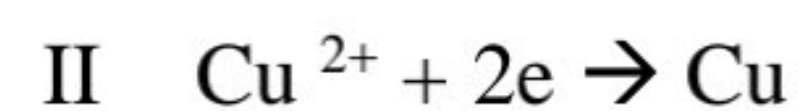
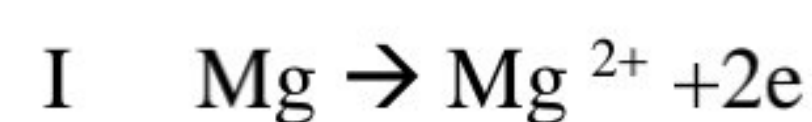
*What is the heat of displacement for the reaction?*

[Muatan haba tentu air = 4.2 J g<sup>-1</sup> °C<sup>-1</sup> ; Ketumpatan air = 1.0 g cm<sup>-3</sup>]  
[Specific heat of capacity = 4.2 J g<sup>-1</sup> °C<sup>-1</sup> ; Density of water = 1.0 g cm<sup>-3</sup>]

- A. - 226.8 KJ mol<sup>-1</sup>
- B. - 243.6 KJ mol<sup>-1</sup>
- C. - 470.4 KJ mol<sup>-1</sup>
- D. - 5670.0 KJ mol<sup>-1</sup>

39. Persamaan setengah manakah yang menunjukkan bahan tindak balas bertindak sebagai agen penurunan?

*Which half equations show that the reactant acts as a reducing agent?*



- A I and II  
*II dan II*
- B I and III  
*I dan III*
- C II and IV  
*II dan IV*
- D III and IV  
*III dan IV*
40. Jadual 40 menunjukkan jumlah isipadu gas oksigen yang dikumpul pada setiap selang masa 30 saat semasa penguraian hidrogen peroksida.  
*Table 40 shows the total volume of oxygen gas collected at 30 second intervals during the decomposition of hydrogen peroxide.*

<b>Masa (s)</b> <i>Time (s)</i>	0	30	60	90	120
<b>Isipadu gas (cm<sup>3</sup>)</b> <i>Volume of gas (cm<sup>3</sup>)</i>	0.00	11.00	20.00	24.00	24.00

**Jadual 40/ Table 40**

Hitungkan kadar tindak balas purata bagi tindak balas tersebut.

*Calculate the average rate of reaction for the reaction.*

- A.  $0.20 \text{ cm}^3 \text{ s}^{-1}$
- B.  $0.27 \text{ cm}^3 \text{ s}^{-1}$
- C.  $0.37 \text{ cm}^3 \text{ s}^{-1}$
- D.  $0.50 \text{ cm}^3 \text{ s}^{-1}$

**KERTAS SOALAN TAMAT  
END OF QUESTION PAPER**

