

NAMA :

TINGKATAN:

MODUL PENINGKATAN PRESTASI MURID TINGKATAN 5aDin
TAHUN 2025**KIMIA****KERTAS 2****2 JAM 30 MINIT****JANGAN BUKA MODUL INI SEHINGGA DIBERITAHU****Arahan kepada murid**

1. Tulis nama dan tingkatan anda pada ruang yang telah disediakan.
2. Kertas soalan ini adalah dalam dwibahasa.
3. Soalan dalam Bahasa Melayu mendahului soalan yang sepadan dalam Bahasa Inggeris.
4. Jawab semua soalan dalam Bahagian A dan Bahagian C
5. Pilih satu soalan sahaja dalam Bahagian B.
6. Sila gunakan pen untuk menulis jawapan.

Untuk Kegunaan Pemeriksa

Bahagian	Soalan	Markah Penuh	Markah Diperoleh
A	1	5	
	2	5	
	3	6	
	4	7	
	5	8	
	6	9	
	7	10	
	8	10	
B	9	20	
	10	20	
C	11	20	
JUMLAH			

Modul ini mengandungi 43 halaman bercetak termasuk muka hadapan

Bahagian A / Section A

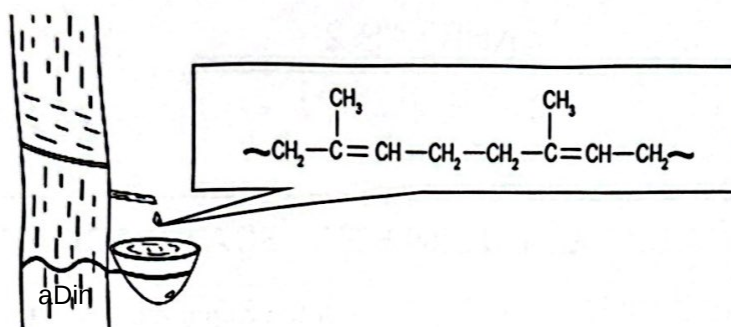
[60 markah / 60 marks]

Jawab semua soalan

Answer all questions

1. Rajah 1.1 menunjukkan formula struktur bagi polimer semula jadi yang terdapat dalam lateks daripada pokok getah.

Diagram 1.1 shows structural formula of natural polymer that is present in latex from rubber tree.



Rajah 1.1 / Diagram 1.1

- (a) Apakah yang dimaksudkan dengan polimer?

What is meant by polymer?

.....
[1 markah/ mark]

- (b) Polimer boleh dikelaskan kepada polimer termoplastik, termoset dan elastomer berdasarkan ciri-cirinya. Nyatakan kelas bagi jenis polimer dalam Rajah 1.1.

Polymer can be classified to thermoplastic, thermoset and elastomer polymers based on characteristics. State the class of type of polymer in Diagram 1.1.

.....
[1 markah/ mark]

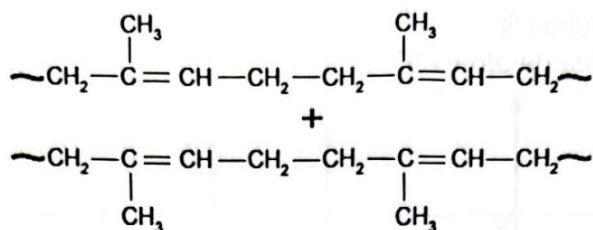
- (c) Nyatakan nama bahan yang boleh ditambah untuk mengekalkan lateks dalam keadaan cecair.

State the name of substance that can be added to maintain latex in liquid state.

.....
[1 markah/ mark]

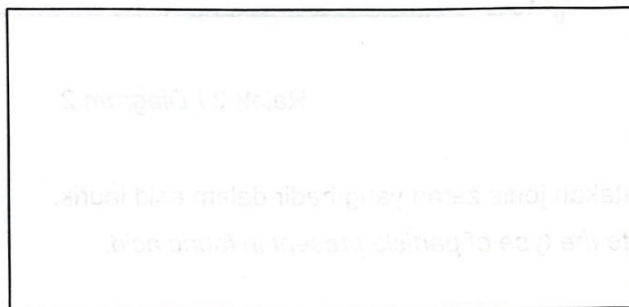
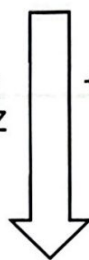
- (d) Polimer dalam Rajah 1.1 menjalani proses Z untuk menambah baik sifat-sifat asalnya seperti dalam Rajah 1.2.

Polymer in Diagram 1.1 undergoes process Z to improve the original properties as shown in Diagram 1.2.



Proses Z
Process Z

+ Sulfur
+ Sulphur



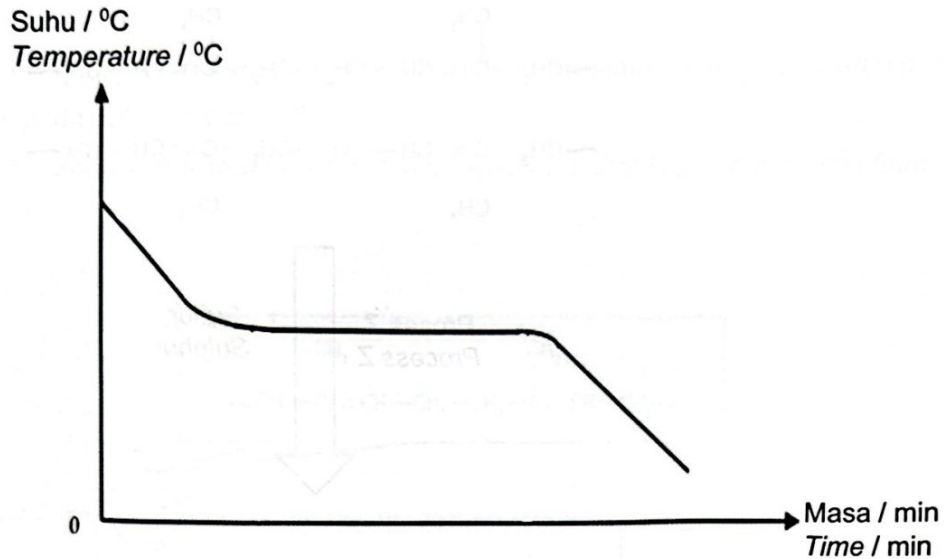
Rajah 1.2 / Diagram 1.2

Nyatakan nama bagi proses Z dan lukiskan struktur polimer yang terbentuk dalam ruang yang disediakan.

State the name for process Z and draw the polymer structure formed in the space provided.

[2 markah/ marks]

2. Rajah 2 menunjukkan graf lengkung penyejukan dari suhu 50.0°C ke suhu bilik bagi asid laurik, $\text{C}_{12}\text{H}_{24}\text{O}_2$. Takat beku asid laurik ialah 43.8°C .
 Diagram 2 shows the cooling curve graph from 50.0°C to room temperature for lauric acid, $\text{C}_{12}\text{H}_{24}\text{O}_2$. The freezing point of lauric acid is 43.8°C .



Rajah 2 / Diagram 2

- (a) Nyatakan jenis zarah yang hadir dalam asid laurik.
 State the type of particle present in lauric acid.

[1 markah/ mark]

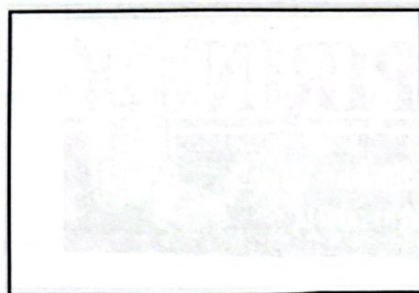
- (b) Namakan proses perubahan keadaan jirim yang terlibat untuk mendapatkan lengkung dalam Rajah 2.
 Name the process in conversion state of matter involved in obtaining the curve in Diagram 2.

[1 markah/ mark]

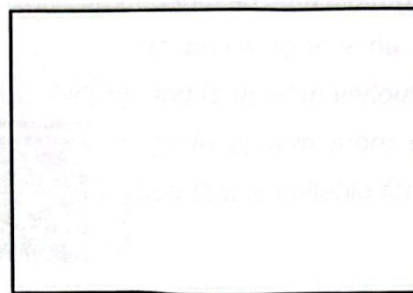
- (c) Tandakan takat beku bagi asid laurik pada Rajah 2.
 Mark the freezing point of lauric acid in Diagram 2.

[1 markah/ mark]

- (d) Lukis susunan zarah asid laurik pada 30 °C dan 45 °C.
Draw the particles arrangement of lauric acid at 30 °C and 45 °C.



30 °C



45 °C

[2 markah/ marks]

3. (a) Rajah 3 menunjukkan ubat yang diberi kepada pesakit untuk melegakan kesakitan.
Diagram 3 shows medicine given to a patient to relief pain.



Rajah 3 / Diagram 3

Berdasarkan Rajah 3,

Based on Diagram 3,

- (i) Nyatakan jenis ubat tersebut.
State the type of the medicine.

[1 markah/ mark]

- (ii) Nyatakan satu kesan sampingan jika aspirin diberikan kepada kanak-kanak.
State one side effect if aspirin is given to a child.

[1 markah/ mark]

- (b) Seorang pesakit mengalami gejala gatal-gatal, bengkak dan artritis. Cadangkan jenis ubat yang sesuai untuk merawat gejala-gejala tersebut.
A patient is experiencing symptoms of itching, swelling and arthritis. Suggest the suitable type of medicine to treat these symptoms.

[1 markah/ mark]

- (c) Bidang nanoteknologi telah berkembang dengan sangat meluas dan digunakan dalam pelbagai bidang. Penurasan air tidak ketinggalan menggunakan teknologi ini bagi memastikan penurasan lebih efisien dapat dijalankan. Cadangkan satu alotrop karbon yang sesuai digunakan sebagai penurasan bahan. Terangkan jawapan anda.

The field of nanotechnology has developed very widely and is used in various fields. Water filtration is no exception to using this technology to ensure more efficient filtration can be carried out. Suggest an allotrope of carbon that is suitable for use as a filtering material. Explain your answer.

[3 markah/ marks]

4. Rajah 4 menunjukkan petikan daripada sebuah artikel.

Diagram 4 shows a quote from an article.

Teknologi Kereta Api Laju STAR 21

STAR 21 ialah kereta api laju pertama di Jepun yang menggunakan motor elektrik jenis frekuensi boleh ubah. Badan kereta api ini dibuat daripada aluminium berkembar menggunakan bahagian berongga panjang yang dikimpal bersama. Pemasangannya menggunakan paku rivet duralumin, iaitu teknik yang dipelajari daripada pembinaan kapal terbang.

STAR 21 High-Speed Train Technology

STAR 21 is the first high-speed train in Japan to use an electric motor with variable frequency. The body of the train is made from double-layered aluminum using long hollow sections welded together. Its assembly utilizes duralumin rivets, a technique learned from aircraft construction.

[Dipetik dan diubahsuai daripada / Quoted and adapted from:

<https://rollingstockworld.com/passenger-cars/history-evolution-of-experimental-high-speed-trains-in-japan/>]

Rajah 4 / Diagram 4

- (a) Apakah unsur lain yang terdapat dalam paku rivet selain daripada aluminium?
What other element is found in rivets besides aluminium?

.....
[1 markah/ mark]

- (b) (i) Terangkan mengapa duralumin lebih kuat berbanding dari aluminium.
Explain why duralumin is stronger than aluminium.

.....
[2 markah/ marks]

- (ii) Duralumin mengandungi 93% aluminium. Hitung berat aluminium dalam kg jika berat satu gerabak ialah 35 tan.

[1 tan=1000 kg]

Duralumin contains 93% aluminium. Calculate the weight of aluminium in kg if the weight of one wagon is 35 tons.

[1 tonne = 1000 kg]

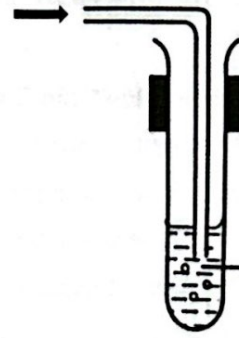
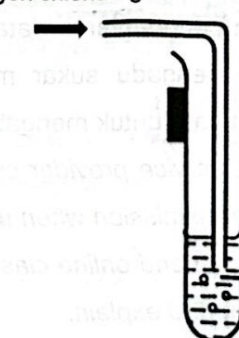
[2 markah/ marks]

- (c) Sebuah syarikat pembekal internet di kawasan luar bandar menghadapi masalah liputan dan penghantaran data yang perlahan apabila menggunakan kabel kuprum. Penduduk mengadu sukar mengikuti kelas dalam talian dan mesyuarat maya. Cadangkan cara untuk mengatasi masalah tersebut dan terangkan.
- An internet service provider company in a rural area is facing coverage issues and slow data transmission when using copper cables. Residents have complained that it is difficult to attend online classes and virtual meetings. Suggest a way to overcome this problem and explain.*

[2 markah/ marks]

5. Rajah 5 menunjukkan dua set eksperimen yang telah dijalankan untuk mengkaji sifat gas hidrogen klorida.

Diagram 5 shows two sets of experiments that had been carried out to investigate the properties of hydrogen chloride gas.

Eksperimen Experiment	Susunan radas Set up of apparatus
Set I	Gas hidrogen klorida Hydrogen chloride gas  Metilbenzena Methylbenzene
Set II	Gas hidrogen klorida Hydrogen chloride gas  Air Water

Rajah 5 / Diagram 5

- (a) Nyatakan jenis ikatan dalam gas hidrogen klorida.

State the type of bond in hydrogen chloride gas.

[1 markah/ mark]

- (b) Apakah yang akan diperhatikan apabila kertas litmus biru dimasukkan ke dalam tabung uji bagi Set I dan Set II? Terangkan jawapan anda.

What is observed when blue litmus papers are put into the test tube for Set I and Set II? Explain your answer.

.....

.....

.....

.....

.....

.....

[3 markah/ marks]

- (c) Hitung kepekatan larutan yang terhasil apabila 480 cm^3 gas hidrogen klorida pada keadaan bilik dilarutkan ke dalam 500 cm^3 air suling. Seterusnya, tentukan nilai pH larutan yang terhasil.

[Isipadu molar = $24 \text{ dm}^3 \text{ mol}^{-1}$ pada keadaan bilik]

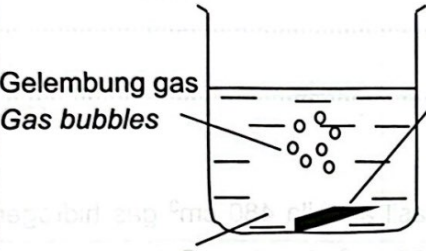
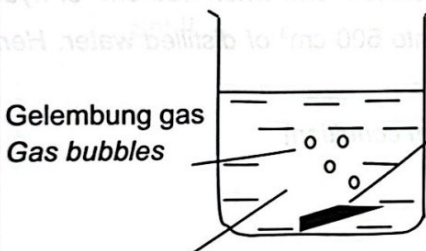
Calculate the concentration of the solution form when 480 cm^3 of hydrogen chloride gas at room condition is dissolved into 500 cm^3 of distilled water. Hence, determine the pH value of the resulting solution.

[Molar volume = $24 \text{ dm}^3 \text{ mol}^{-1}$ at room condition]

[4 markah/ marks]

6. Dua eksperimen dijalankan untuk menyiasat kesan kepekatan asid sulfurik ke atas kadar suatu tindak balas. Jadual 6 menunjukkan keputusan eksperimen.

Two experiments were carried out to investigate the effect of concentration of sulphuric acid on the rate of reaction. Table 6 shows the results of the experiments.

	Eksperimen Experiment	Masa yang diambil untuk magnesium melarut sepenuhnya (s) <i>Time taken for magnesium to dissolve completely (s)</i>
I	 1.2 g pita magnesium 1.2 g magnesium ribbon Gelembung gas Gas bubbles Asid sulfurik 1.0 mol dm⁻³ berlebihan 1.0 mol dm⁻³ excess sulphuric acid	30
II	 1.2 g pita magnesium 1.2 g magnesium ribbon Gelembung gas Gas bubbles Asid sulfurik 0.5 mol dm⁻³ berlebihan 0.5 mol dm⁻³ excess sulphuric acid	60

Jadual 6 / Table 6

- (a) Nyatakan satu faktor yang boleh mempengaruhi kadar tindak balas.

State one factor that can affect the rate of reaction.

.....
[1 markah/ mark]

- (b) Berdasarkan Rajah 6,

Based on Diagram 6,

- (i) namakan gas yang terbebas dalam eksperimen ini.

name the gas released in this experiment.

.....
[1 markah/ mark]

- (ii) tulis persamaan kimia bagi tindak balas antara magnesium dengan asid sulfurik.

write a chemical equation for the reaction between magnesium and sulphuric acid.

.....
[1 markah/ mark]

- (iii) hitung isipadu maksimum gas yang terbebas pada suhu bilik dalam eksperimen ini.

calculate the maximum volume of the gas released at room temperature in this experiment.

[Jisim atom relatif: Mg=24 ; Isipadu 1 mol gas pada suhu bilik = 24 dm³]

[Relative atomic mass: Mg=24; Volume of 1 mole of gas at room temperature = 24 dm³]

[2 markah/ marks]

- (c) Bandingkan kadar tindak balas antara eksperimen I dan eksperimen II. Terangkan jawapan anda berdasarkan teori perlanggaran.

Compare the rate of reaction between experiment I and experiment II. Explain your answer based on collision theory.

.....

.....

.....

.....

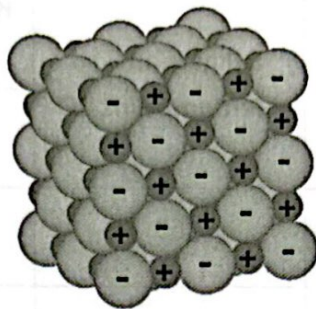
.....

.....

[3 markah/ marks]

7. (a) Rajah 7.1 menunjukkan struktur zarah sebatian Z.

Diagram 7.1 shows the particle structure of the Z compound.



Rajah 7.1 / Diagram 7.1

- (i) Nyatakan jenis sebatian Z.

State the type of compound Z.

[1 markah/ mark]

- (ii) Nyatakan jenis zarah subatom yang terlibat dalam pembentukan ikatan kimia.

State the type of subatomic particles involved in the formation of chemical bonds.

[1 markah/ mark]

- (b) Jadual 7 menunjukkan sifat fizik bahan P, Q dan R.

Table 7 shows the physical properties of substance P, Q and R.

Bahan Substance	Takat lebur, °C Melting point, °C	Kekonduksian elektrik dalam keadaan Electrical conductivity in conditions	
		Pepejal Solid	Leburan Melting
P	55	Tidak No	Tidak No
Q	750	Tidak No	Ya Yes
R	600	Ya Yes	Ya Yes

Jadual 7 / Table 7

Rajah 7.2 menunjukkan simbol tiga unsur yang berbeza.

Diagram 7.2 shows the symbols of three different elements.



Rajah 7.2 / Diagram 7.2

Berdasarkan Rajah 7.2,

Based on Diagram 7.2,

- (i) unsur yang manakah merupakan bahan R?

which element is substance R?

.....
[1 markah/ mark]

- (ii) kenal pasti unsur-unsur yang boleh membentuk bahan P.

identify the elements that can form the substance P.

.....
[1 markah/ mark]

(iii) lukis susunan elektron bahan P.

draw the electron arrangement for the substance P.



[2 markah/ marks]

(iv) hitungkan jisim relatif bahan P.

calculate the relative mass of substance P.

[1 markah/ mark]

- (c) Rajah 7.3 menunjukkan sehelai baju yang terkena cat minyak semasa aktiviti melukis.
Diagram 7.3 shows a shirt that was exposed to oil paint during painting activities.



Rajah 7.3/ Diagram 7.3

Antara dua bahan yang ditunjukkan dalam Rajah 7.3, yang manakah lebih sesuai digunakan untuk menanggalkan cat tersebut? Wajarkan jawapan anda.

Which of the two substances shown in Diagram 7.3 is more suitable for removing the paint? Justify your answer.

.....

.....

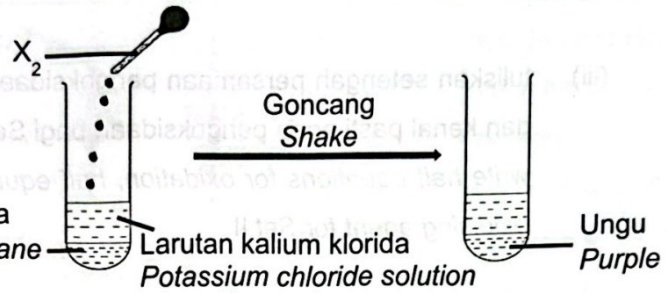
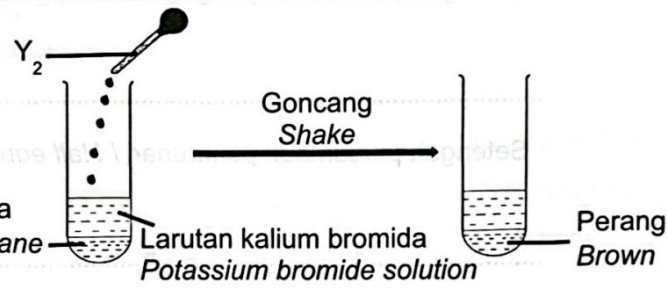
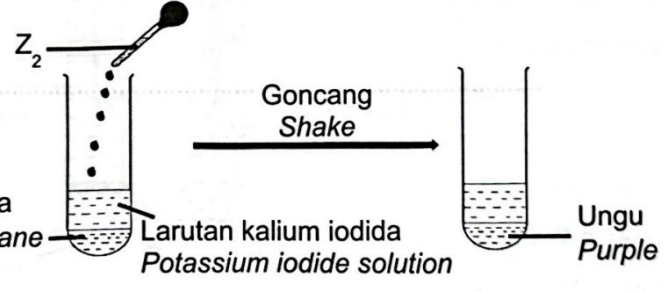
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[3 markah/ marks]

8. Rajah 8 menunjukkan susunan radas untuk mengkaji penyesaran halogen daripada larutan halidanya oleh halogen X_2 , Y_2 dan Z_2 .

Table 8 shows the apparatus setup for investigating the displacement of halogens from their halide solutions by halogen X_2 , Y_2 and Z_2 .

Set	Pemerhatian Observation
I	 1,1,1-trikloroetana 1,1,1-trichloroethane Larutan kalium klorida Potassium chloride solution Ungu Purple
II	 1,1,1-trikloroetana 1,1,1-trichloroethane Larutan kalium bromida Potassium bromide solution Perang Brown
III	 1,1,1-trikloroetana 1,1,1-trichloroethane Larutan kalium iodida Potassium iodide solution Ungu Purple

Rajah 8/ Diagram 8

- (a) Berdasarkan Rajah 8,
Based on Diagram 8,
- (i) nyatakan fungsi 1,1,1-trikloroetana.
state the function of 1,1,1-trichloroethane.

[1 markah/ mark]

- (ii) susun unsur X, Y dan Z dari segi kekuatan sebagai agen pengoksidaan dalam tertib menaik.

arrange element X, Y and Z in terms of strength as oxidising agents in ascending order.

.....
[1 markah/ mark]

- (iii) tuliskan setengah persamaan pengoksidaan, setengah persamaan penurunan dan kenal pasti agen pengoksidaan bagi Set II.

write half equations for oxidation, half equations for reduction and identify the oxidising agent for Set II.

Setengah persamaan pengoksidaan / *Half equation for oxidation:*

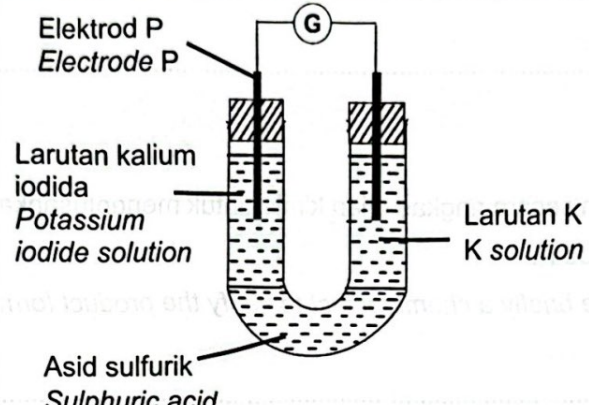
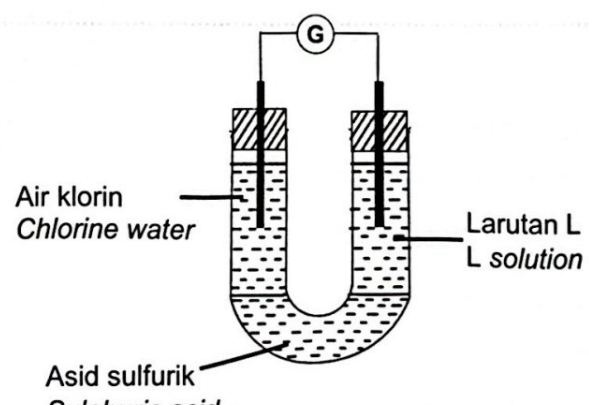
.....
Setengah persamaan penurunan / *Half equation for reduction:*

.....
Agen pengoksidaan / *Oxidising agent:*

.....
[3 markah/ marks]

- (b) Jadual 8 menunjukkan dua set eksperimen untuk mengkaji pemindahan elektron pada suatu jarak.

Table 8 shows two sets of experiments to investigate electron transfer at a distance.

Set	Susunan rajah Set-up apparatus	Pemerhatian Observation
I	 Elektrod P Electrode P Larutan kalium iodida Potassium iodide solution Asid sulfurik Sulphuric acid Larutan K K solution	Warna larutan kalium iodida berubah daripada tidak berwarna kepada perang. <i>The colour of potassium iodide solution changes from colourless to brown.</i>
II	 Air klorin Chlorine water Asid sulfurik Sulphuric acid Larutan L L solution	Warna air klorin berubah daripada kuning menjadi tidak berwarna. Warna hijau larutan L berubah menjadi warna perang. <i>The colour of chlorine water changes from yellow to colourless.</i> <i>The green colour of solution L changes to brown.</i>

Jadual 8/ Table 8

- (i) Berdasarkan maklumat dalam Jadual 8, kenalpasti larutan K dan larutan L.
Based on the information in Table 8, identify solution K and solution L.

Larutan K/ *Solution K* :

.....

Larutan L / *Solution L* :

.....

[2 markah/ *marks*]

- (ii) Huraikan secara ringkas ujian kimia untuk menentusahkan hasil yang terbentuk di elektrod P.

Describe briefly a chemical test to verify the product formed at electrode P.

.....

.....

.....

.....

[3 markah/ *marks*]



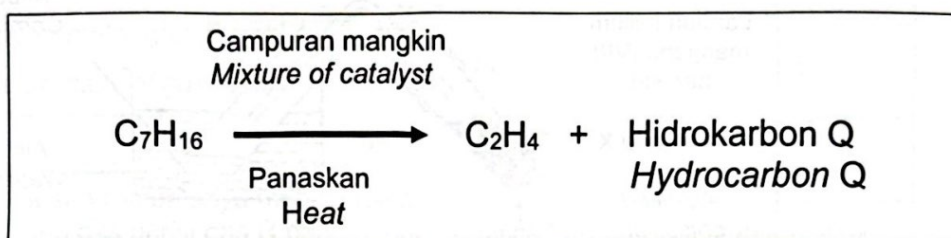
Bahagian B / Section B

[20 markah / 20 marks]

Bahagian ini mengandungi **dua** soalan. Jawab **satu** soalan sahaja.*This section consists of **two** questions. Answer only **one** question*

9. (a) Rajah 9.1 menunjukkan tindak balas yang digunakan dalam industri penghasilan hidrokarbon yang lebih kecil daripada hidrokarbon rantai panjang.

Diagram 9.1 shows the reaction used in industrial production of smaller hydrocarbon from long chain hydrocarbon.



Rajah 9.1/ Diagram 9.1

- (i) Namakan tindak balas di atas dan cadangkan satu mangkin yang boleh digunakan dalam tindak balas tersebut. Nyatakan formula molekul dan lukiskan formula struktur bagi hidrokarbon Q.

Name the above reaction and suggest a catalyst that can be used in the reaction.

State the molecular formula and draw the structural formula of hydrocarbon Q.

[4 markah/ marks]

- (ii) 5.6 kg sebatian C_2H_4 terbakar dalam oksigen berlebihan untuk menghasilkan gas karbon dioksida dan air. Tuliskan persamaan kimia bagi tindak balas ini, seterusnya hitungkan isipadu gas karbon dioksida yang terhasil.

5.6 kg compound C_2H_4 burnt in excess oxygen to produce carbon dioxide gas and water. Write chemical equation for this reaction, hence calculate the volume of carbon dioxide gas produced.

[Jisim atom relatif C=12;H= 1;

Isipadu molar gas pada keadaan bilik= 24 dm³ mol⁻¹]

[Relative atomic mass: C=12;H=1;

Molar volume of gas at room conditions = 24 dm³ mol⁻¹]

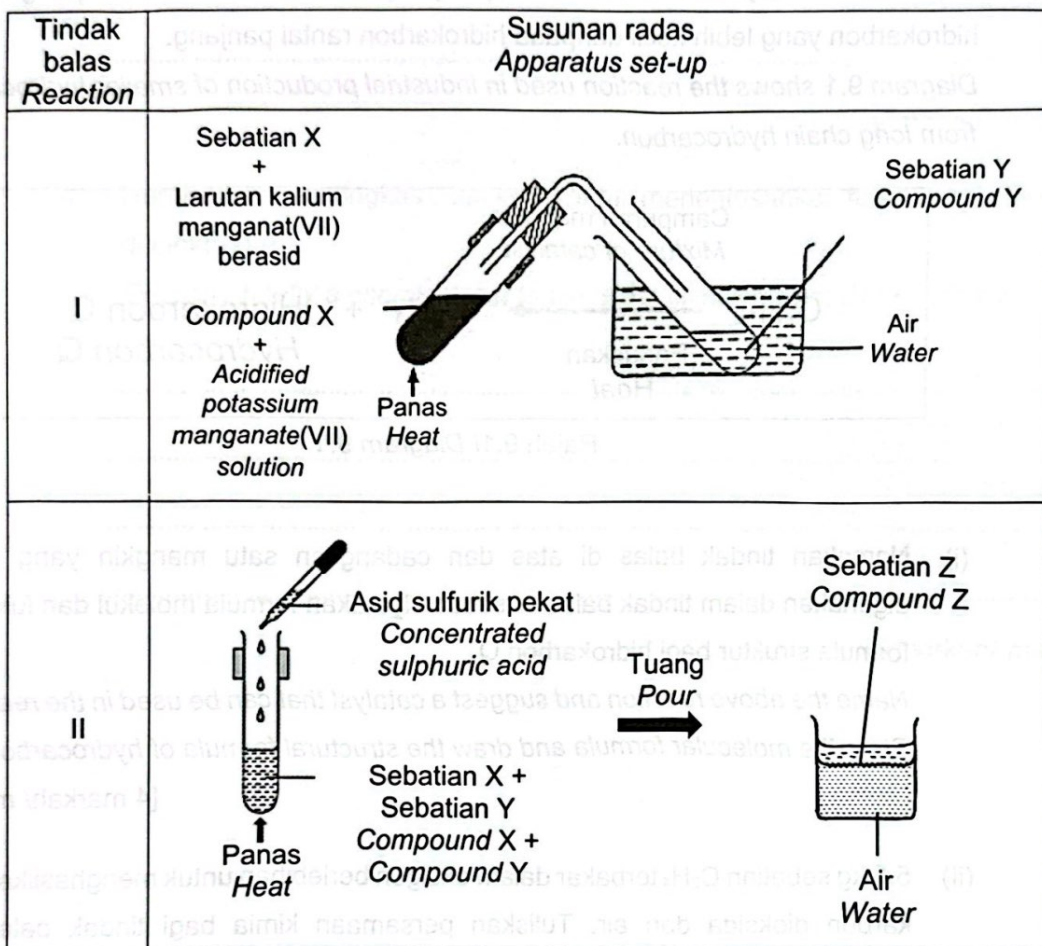
[5 markah/ marks]

- (b) Rajah 9.2 menunjukkan susunan radas bagi proses penukaran sebatian X kepada sebatian Z.

Sebatian X mempunyai bilangan atom karbon per molekul kurang daripada tiga.

Diagram 9.2 shows apparatus set-up of conversion process of compound X to compound Z.

Compound X has number of carbon atom per molecule less than three.



Rajah 9.2/ Diagram 9.2

Berdasarkan pada Rajah 9.2, kenal pasti tindak balas I, tindak balas II, sebatian X, sebatian Y dan sebatian Z. Nyatakan satu persamaan sifat antara sebatian X dan sebatian Z.

Based on Diagram 9.2, identify reaction I, reaction II, compound X, compound Y and compound Z. State one similar property between compound X and compound Z.

[6 markah/ marks]

- (c) Rajah 9.3 menunjukkan dua tong gas memasak yang berisi jenis gas yang berbeza dan Rajah 9.4 menunjukkan perbualan antara Susan dan Siti.

Diagram 9.3 shows two cooking gas cylinders filled with different type of gas and Diagram 9.4 shows conversation between Susan and Siti.

Jenis gas Type of gas		
Jisim molar gas/ g mol ⁻¹ Molar mass of gas/ g mol ⁻¹	44	58

Rajah 9.3/ Diagram 9.3

Susan, rumah saya menggunakan tong gas berisi gas R dan 15 mol gas ini menghasilkan haba sebanyak 33301.5 kJ. Gas ini lebih menjimatkan. <i>Susan, my house uses a gas cylinder filled with R gas and 15 moles of this gas produces 33301.5 kJ of heat. This gas is more economical.</i> 	Siti, rumah saya menggunakan tong gas berisi gas S dan 10 mol gas ini menghasilkan haba sebanyak 28775 kJ. Gas ini juga lebih menjimatkan. <i>Siti, my house uses a gas cylinder filled with S gas and 10 moles of this gas produces 28775 kJ of heat. This gas also more economical.</i> 
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Rajah 9.4/ Diagram 9.4

Berdasarkan Rajah 9.3 dan 9.4, gas memasak di rumah siapakah lebih menjimatkan?

Buktikan dengan menghitung nilai bahan api bagi gas-gas tersebut.

Based on diagram 9.3 and 9.4, whose home cooking gas is more economical?

Prove it by calculating the fuel value of the gas.

[5 markah/ marks]

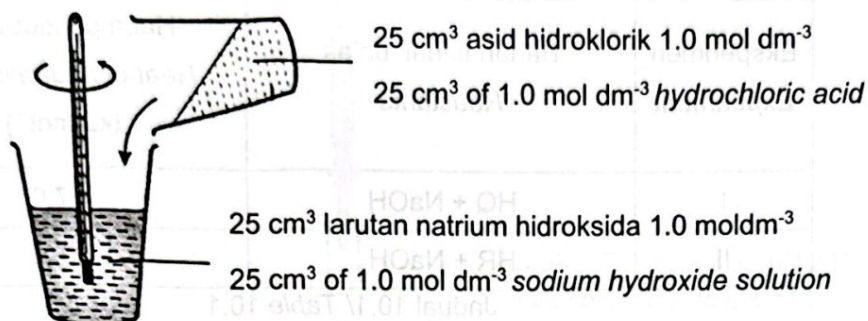
Soalan 9 / Question 9

[illegible]

This image shows a full page of a handwriting practice worksheet. It consists of approximately 20 horizontal rows. Each row is defined by two parallel dashed lines, creating a series of uniform gaps for letter height. The lines are evenly spaced across the entire page, providing a guide for consistent letter formation. There is no text or other markings on the page.

10. Rajah 10.1 menunjukkan susunan radas satu eksperimen untuk menentukan haba peneutralan antara asid dan alkali.

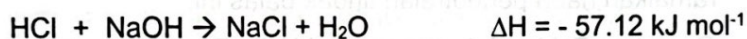
Diagram 10.1 shows the apparatus set up of an experiment to determine the heat of neutralisation between acid and alkali.



Rajah 10.1/ Diagram 10.1

Persamaan termokimia bagi tindak balas ini ialah:

The thermochemical equation for this reaction is:



- (a) (i) Apakah yang dimaksudkan dengan haba peneutralan? Nyatakan jenis tindak balas berdasarkan perubahan tenaga haba dan lukiskan gambar rajah aras tenaga bagi tindak balas ini.

What is meant by heat of neutralisation? State type of reaction based on heat energy change and draw the energy level diagram for this reaction.

[4 markah / marks]

- (ii) Jadual 10.1 menunjukkan haba peneutralan bagi tindak balas antara dua asid monoprotik HQ dan HR dengan larutan natrium hidroksida.

Table 10.1 shows the heat of neutralisation of the reaction between two monoprotic acids HQ and HR with sodium hydroxide solution.

Eksperimen <i>Experiment</i>	Bahan tindak balas <i>Reactants</i>	Haba peneutralan <i>Heat of neutralisation</i> (kJ mol ⁻¹)
I	HQ + NaOH	-57.0
II	HR + NaOH	-55.0

Jadual 10.1/ Table 10.1

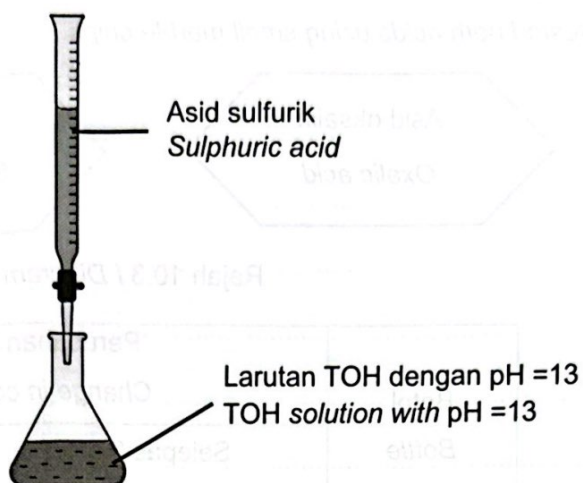
Berdasarkan Jadual 10.1, cadangkan asid HR. Terangkan perbezaan haba peneutralan bagi Eksperimen I dan Eksperimen II. Jika Eksperimen I diulang menggunakan asid sulfurik dengan isipadu dan kepekatan yang sama, ramalkan haba peneutralan tindak balas ini.

Based on Table 10.1, suggest acid HR. Explain the difference in the heat of neutralisation for Experiment I and Experiment II. If Experiment I repeated by using sulphuric acid with same volume and concentration, predict the heat of neutralisation of this reaction.

[5 markah / marks]

- (b) Rajah 10.2 menunjukkan susunan radas bagi suatu pentitratan.

Figure 10.2 shows an apparatus set-up of a titration.



Rajah 10.2 / Diagram 10.2

- (i) Apakah maksud nilai pH?

Tentukan kekuatan dan kepekatan bagi larutan TOH.

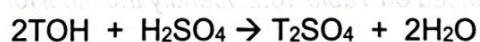
What is meant by pH value?

Determine the strength and concentration of TOH solution.

[4 markah / marks]

- (ii) Larutan alkali tersebut digunakan untuk meneutralkan 0.002 mol asid sulfurik seperti persamaan di bawah.

The alkaline solution is used to neutralize 0.002 mol of sulphuric acid as below equation.

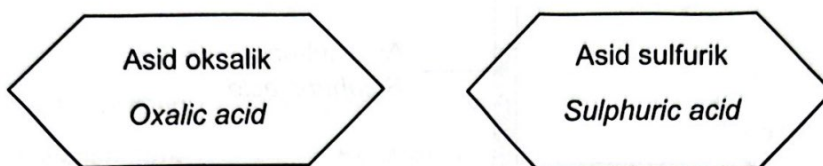


Tentukan isipadu larutan TOH yang digunakan.

Determine the volume of TOH solution used.

[2 markah / marks]

- (c) Rajah 10.3 menunjukkan label bagi dua botol asid yang telah tertanggal. Encik Ali telah menguji kedua-dua asid tersebut menggunakan ketulan kecil marmar. *Diagram 10.3 shows that labels of two bottles of acid that have come off. Mr. Ali tested both acids using small marble chips.*



Rajah 10.3 / Diagram 10.3

Botol <i>Bottle</i>	Perubahan warna air kapur <i>Change in color of lime water</i>	
	Selepas 2 minit <i>After 2 minute</i>	Selepas 5 minit <i>After 5 minute</i>
A	Warna air kapur tidak berubah <i>The color of the lime water does not change</i>	Air kapur menjadi keruh <i>Lime water turns cloudy</i>
B	Air kapur menjadi keruh <i>Lime water turns cloudy</i>	Air kapur menjadi keruh. <i>Lime water turns cloudy</i>

Jadual 10.2 / Table 10.2

Berdasarkan Jadual 10.2, kenal pasti label bagi setiap botol reagen tersebut. Terangkan jawapan anda.

Based on Table 10.2, identify the label for each reagent bottle. Explain your answer.

[5 markah / marks]

Soalan 10 / Question 10

This image shows a full page of a handwriting practice worksheet. It consists of approximately 20 horizontal rows. Each row is defined by two parallel dashed lines, one above and one below the writing area, providing a guide for letter height and placement. The background is plain white, and there are no other markings or text on the page.

Handwriting practice lines consisting of 25 horizontal dotted lines.

Bahagian C / Section C

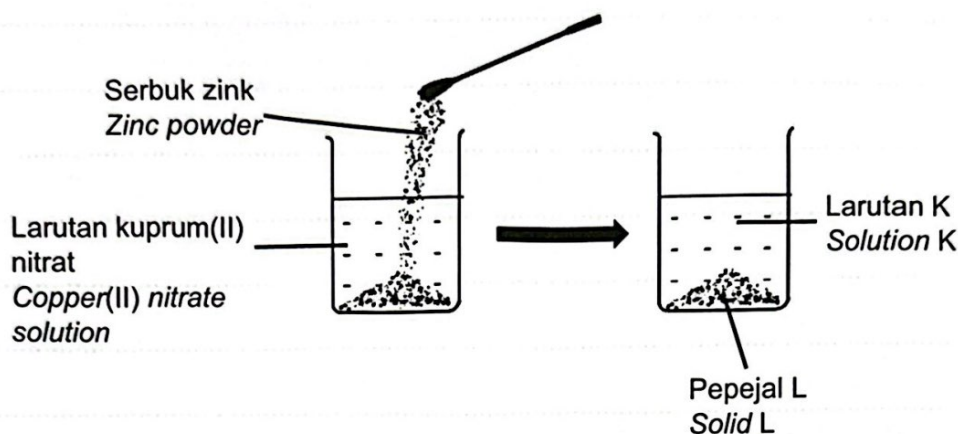
[20 markah / 20 marks]

Jawab soalan dalam bahagian ini.

Answer question in this section.

11. (a) Rajah 11.1 menunjukkan satu tindak balas penyesaran logam daripada larutan garamnya.

Diagram 11.1 shows a metal displacement reaction from its salt solution.



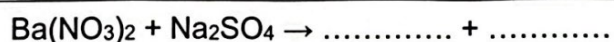
Rajah 11.1/ Diagram 11.1

Nyatakan maksud redoks. Berdasarkan Rajah 11.1, tuliskan formula kimia bagi larutan K yang terbentuk dan nyatakan warna pepejal L.

State the meaning of redox. Based on Diagram 11.1, write the chemical formula for the solution K formed and state the colour of solid L.

[3 markah / marks]

(b)



Salin dan lengkapkan persamaan di atas. Namakan tindak balas di atas. Tentukan sama ada tindak balas tersebut tindak balas redoks atau pun tidak. Terangkan jawapan anda.

Copy and complete the above equation. Name the above reaction. Determine whether the reaction is a redox reaction or not. Explain your answer.

[4 markah / marks]

(c)

Garam Salt	Penerangan Explanation	Pemerhatian Observation
Y	Pepejal Y dipanaskan dan gas N yang terbebas diuji dengan kertas litmus biru lembap dan gas P diuji dengan kayu uji berbara. <i>Solid Y is heated and the liberated gas N is tested with damp blue litmus paper and gas P is tested with a glowing wooden splinter.</i>	- Baki pepejal M berubah dari warna kuning kepada putih apabila disejukkan. <i>The solid residue M changes from yellow to white when cooled.</i> - Kertas litmus biru lembap berubah menjadi merah. <i>Damp blue litmus paper turns red.</i> - Kayu uji berbara menyala. <i>Glowing wooden splinter ignites.</i>
Z	Tindak balas antara larutan natrium sulfat 2.0 mol dm^{-3} dan larutan plumbum(II) nitrat 2.0 mol dm^{-3} <i>The reaction between 2.0 mol dm^{-3} sodium sulphate solution and 2.0 mol dm^{-3} lead(II) nitrate solution.</i>	Mendakan putih terbentuk. <i>A white precipitate is formed.</i>

Jadual 11 / Table 11

Berdasarkan Jadual 11, kenal pasti garam Y, garam Z, baki pepejal M dan gas P. Nyatakan warna gas N yang menukarkan kertas litmus biru lembap kepada merah.

Based on Table 11, identify salt Y, salt Z, solid residue M and gas P. State the colour of the gas N that turns damp blue litmus paper to red.

[5 markah / marks]

- (d) Rajah 11.2 menunjukkan perbualan seorang guru kimia dengan beberapa orang pelajar di dalam makmal.

Diagram 11.2 shows a conversation between a chemistry teacher and several students in the laboratory.



"Kita akan bantu sebuah kedai akuarium untuk mengatasi masalah air tercemar oleh ion argentum."

"We will be helping an aquarium shop to overcome the problem with water contaminated by silver ions."

Rajah 11.2 / Diagram 11.2

Berdasarkan situasi di atas, cadangkan satu bahan dari dapur yang sesuai untuk dicampurkan dengan air tercemar untuk menyingkirkan ion argentum.

Tulis persamaan ion bagi tindak balas tersebut.

Dengan menggunakan kaedah penyediaan garam Z di 11(c), huraikan langkah-langkah bagaimana anda menyingkirkan ion argentum dari air tercemar.

Based on the situation above, suggest a suitable substance from kitchen to add with contaminated water to remove silver ions.

Write the ionic equation for the reaction.

By using the method of preparing salt Z in 11(c), describe the steps on how you would remove silver ions from contaminated water.

[8 markah / marks]

Soalan 11 / Question 11

[illegible]

Blank lined paper for writing.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

MODUL TAMAT

JADUAL BERKALA UNSUR

1 H Hidrogen																	2 He Helium 4				
3 Li Litium 7	4 Be Berilium 9															5 B Boron 11	6 C Karbon 12	7 N Nitrogen 14	8 O Oksigen 16	9 F Flourin 19	10 Ne Neon 20
11 Na Natrium 23	12 Mg Magnesium 24															13 Al Aluminium 27	14 Si Silikon 28	15 P Fosforus 31	16 S Sulfur 32	17 Cl Klorin 35.5	18 Ar Argon 40
19 K Kalium 39	20 Ca Kalsium 40	21 Sc Skandium 45	22 Ti Titanium 48	23 V Vanadium 51	24 Cr Kromium 52	25 Mn Mangan 55	26 Fe Feran 56	27 Co Kobalt 59	28 Ni Nikel 59	29 Cu Kuprum 64	30 Zn Zink 65	31 Ga Galium 70	32 Ge Germanium 73	33 As Arsenik 75	34 Se Selenium 79	35 Br Bromin 80	36 Kr Kripton 84				
37 Rb Rubidium 86	38 Sr Strontium 88	39 Y Itrium 89	40 Zr Zirkonium 91	41 Nb Niobium 93	42 Mo Molibdenum 96	43 Tc Teknetium 98	44 Ru Rutenium 101	45 Rh Rodium 103	46 Pd Paladium 106	47 Ag Argentum 108	48 Cd Kadmium 112	49 In Indium 115	50 Sn Stanum 119	51 Sb Antimoni 122	52 Te Telurium 128	53 I Iodin 127	54 Xe Xenon 131				
55 Cs Sesium 133	56 Ba Barium 137	57 La Lantanum 139	72 Hf Hafnium 179	73 Ta Tantalum 181	74 W Tungsten 184	75 Re Renium 186	76 Os Osmium 190	77 Ir Iridium 192	78 Pt Platinum 195	79 Au Aurum 197	80 Hg Merkuri 201	81 Tl Tallium 204	82 Pb Plumbum 207	83 Bi Bismut 209	84 Po Polonium 210	85 At Astatin 210	86 Rn Radon 222				
87 Fr Fransium 223	88 Ra Radium 226	89 Ac Aktinium 227	104 Unq Unnil-kwadium 257	105 Unp Unnil-pentium 260	106 Unh Unnil-heksium 263	107 Uns Unnil-septium 262	108 Uno Unnil-oktium 265	109 Une Unnil-enium 266													

10

Ne

Neon

20

Nombor Proton

Simbol

Nama Unsur

Jisim atom relatif

58 Ce Serium 140	59 Pr Praseodimium 141	60 Nd Neodimium 144	61 Pm Prometrium 147	62 Sm Samarium 150	63 Eu Europium 152	64 Gd Gadolinium 157	65 Tb Terbium 159	66 Dy Disprosium 163	67 Ho Holmium 165	68 Er Erbium 167	69 Tm Tulium 169	70 Yb Iterbium 173	71 Lu Lutetium 175
90 Th Torium 232	91 Pa Proaktinium 231	92 U Uranium 238	93 Np Neptunium 237	94 Pu Plutonium 244	95 Am Amerisium 243	96 Cm Kuriun 247	97 Bk Berkelium 247	98 Cf Kalifornium 249	99 Es Einstenium 254	100 Fm Fermium 253	101 Md Mendelevium 256	102 No Nobelium 254	103 Lr Lawrensium 257

PERIODIC TABLE OF THE ELEMENTS

1 H Hydrogen 1																	2 He Helium 4		
3 Li Lithium 7	4 Be Beryllium 9													5 B Boron 11	6 C Carbon 12	7 N Nitrogen 14	8 O Oxygen 16	9 F Fluorine 19	10 Ne Neon 20
11 Na Sodium 23	12 Mg Magnesium 24													13 Al Aluminium 27	14 Si Silicon 28	15 P Phosphorus 31	16 S Sulphur 32	17 Cl Chlorine 35	18 Ar Argon 40
19 K Potassium 39	20 Ca Calcium 40	21 Sc Scandium 45	22 Ti Titanium 48	23 V Vanadium 51	24 Cr Chromium 52	25 Mn Manganese 55	26 Fe Iron 56	27 Co Cobalt 59	28 Ni Nickel 59	29 Cu Copper 64	30 Zn Zinc 65	31 Ga Gallium 70	32 Ge Germanium 73	33 As Arsenic 75	34 Se Selenium 79	35 Br Bromine 80	36 Kr Krypton 84		
37 Rb Rubidium 86	38 Sr Strontium 88	39 Y Yttrium 89	40 Zr Zirconium 91	41 Nb Niobium 93	42 Mo Molybdenum 96	43 Tc Technetium 98	44 Ru Ruthenium 101	45 Rh Rhodium 103	46 Pd Palladium 106	47 Ag Silver 108	48 Cd Cadmium 112	49 In Indium 115	50 Sn Tin 119	51 Sb Antimony 122	52 Te Tellurium 128	53 I Iodine 127	54 Xe Xenon 131		
55 Cs Caesium 133	56 Ba Barium 137	57 La Lanthanum 139	72 Hf Hafnium 179	73 Ta Tantalum 181	74 W Tungsten 184	75 Re Rhenium 186	76 Os Osmium 190	77 Ir Iridium 192	78 Pt Platinum 195	79 Au Gold 197	80 Hg Mercury 201	81 Tl Thallium 204	82 Pb Lead 207	83 Bi Bismuth 209	84 Po Polonium 210	85 At Astatine 210	86 Rn Radon 222		
87 Fr Francium 223	88 Ra Radium 226	89 Ac Actinium 227	104 Unq Unnilquadium 257	105 Unp Unnilpentium 260	106 Unh Unnilhexium 263	107 Uns Unnilseptium 262	108 Uno Unniloctium 265	109 Une Unnilennium 266											

10

Ne

Neon

20

Proton number

Symbol

Name of element

Relative atomic mass

