

1511/2  
Science  
Paper 2  
May  
2010  
2 ½ hours

NAME : ..... FORM : .....



## JABATAN PELAJARAN NEGERI TERENGGANU

### PEPERIKSAAN PERTENGAHAN TAHUN TINGKATAN EMPAT 2010

#### SCIENCE

#### Paper 2

Two Hours and Thirty Minutes

**DO NOT OPEN THIS TEST PAPER UNTIL YOU ARE TOLD TO DO SO**

- 1 This question paper consists of three sections: Section A, Section B and Section C.
- 2 Answer all questions in Section A and Section B. Write your answers for Section A and Section B clearly in the space provided on the question paper.
- 3 For Section C, answer Question 10 and choose another Question 11 or Question 12. Write your answer for Section C on the lined pages provided at the end of this paper. Answer should be clear and logical.
- 4 The marks allocated for each sub-part of a question are shown in brackets.
- 5 The time suggested to complete Section A is 60 minutes, Section B is 50 minutes and Section C is 40 minutes.
- 6 You are allowed to answer the question in English or Bahasa Melayu.

<i>For Examiner's Use</i>		
Section	Question	Marks
A	1	
	2	
	3	
	4	
B	5	
	6	
	7	
	8	
C	9	
	10	
	11	
	12	
Total		

Disediakan Oleh:  
AKRAM NEGERI TERENGGANU

Dibiayai Oleh:  
KERAJAAN NEGERI TERENGGANU

TERENGGANU ANJUNG ILMU

Dicetak Oleh:  
Percetakan Yayasan Islam Terengganu Sdn. Bhd.  
Tel.: 609-666 8611/6652/8601 Faks: 609-666 0611/0063

This question paper consists of 20 printed pages

**Section A**  
**Bahagian A**

[20 marks]

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

- 1 Diagram 1.1 and Diagram 1.2 show an experiment to study the effect of impurities on boiling point of distilled water.  
*Rajah 1.1 dan Rajah 1.2 menunjukkan eksperimen untuk mengkaji kesan bendasing ke atas takat didih air suling.*

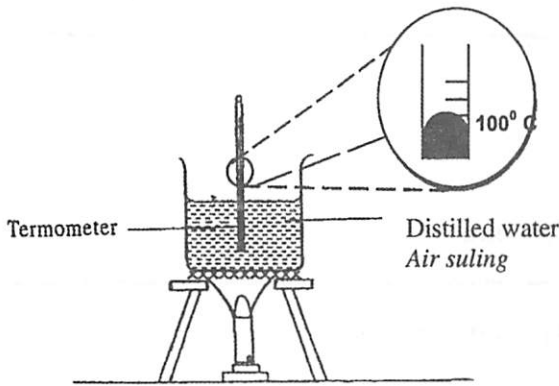


Diagram 1.1  
*Rajah 1.1*

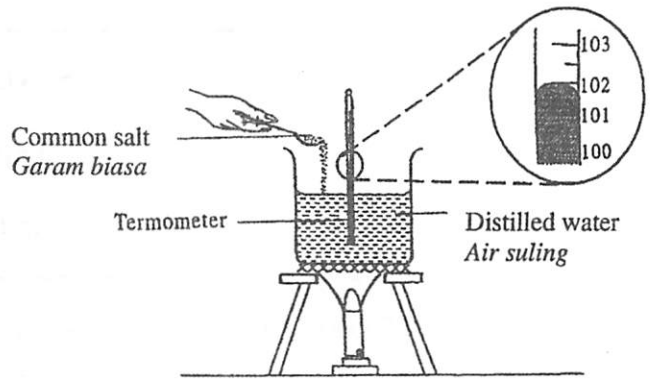


Diagram 1.2  
*Rajah 1.2*

- (a) (i) Based on Diagram 1.2, what is your observation on boiling point of distilled water with common salt?  
*Berdasarkan Rajah 1.2, apakah pemerhatian anda ke atas takat didih air suling dengan garam biasa?*

..... [1 mark]

- (ii) State the reading of the thermometer in Diagram 1.2.  
*Nyatakan bacaan termometer dalam Rajah 1.2.*

..... °C [1 mark]

- (b) State the manipulated variable in this experiment.  
*Nyatakan pembolehubah yang dimanipulasikan dalam eksperimen ini.*

..... [1 mark]

- (c) State **one** hypothesis from this experiment.  
Nyatakan **satu** hipotesis daripada eksperimen ini.

.....  
[1 mark]

- (d) Distilled water is a pure liquid. State the operational definition for distilled water.  
Air suling adalah cecair tulen. Nyatakan definisi secara operasi bagi air suling.

.....  
[1 mark]

- 2 Diagram 2 shows an arrangement of the apparatus to study the electrical conductivity of substances P, Q and R in solid and liquid state.  
Rajah 2 menunjukkan susunan radas untuk mengkaji kekonduksian elektrik bagi bahan P, Q and R dalam keadaan pepejal dan cecair.

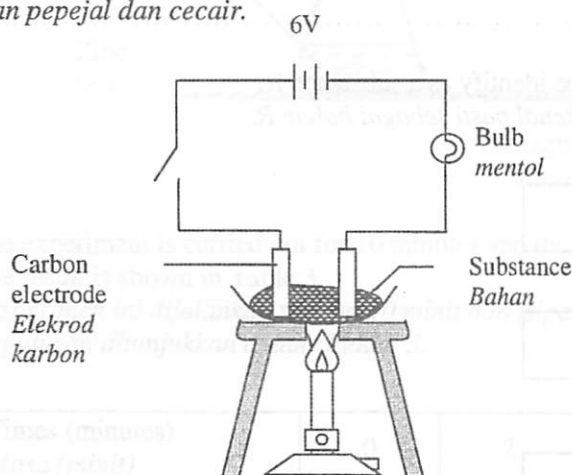
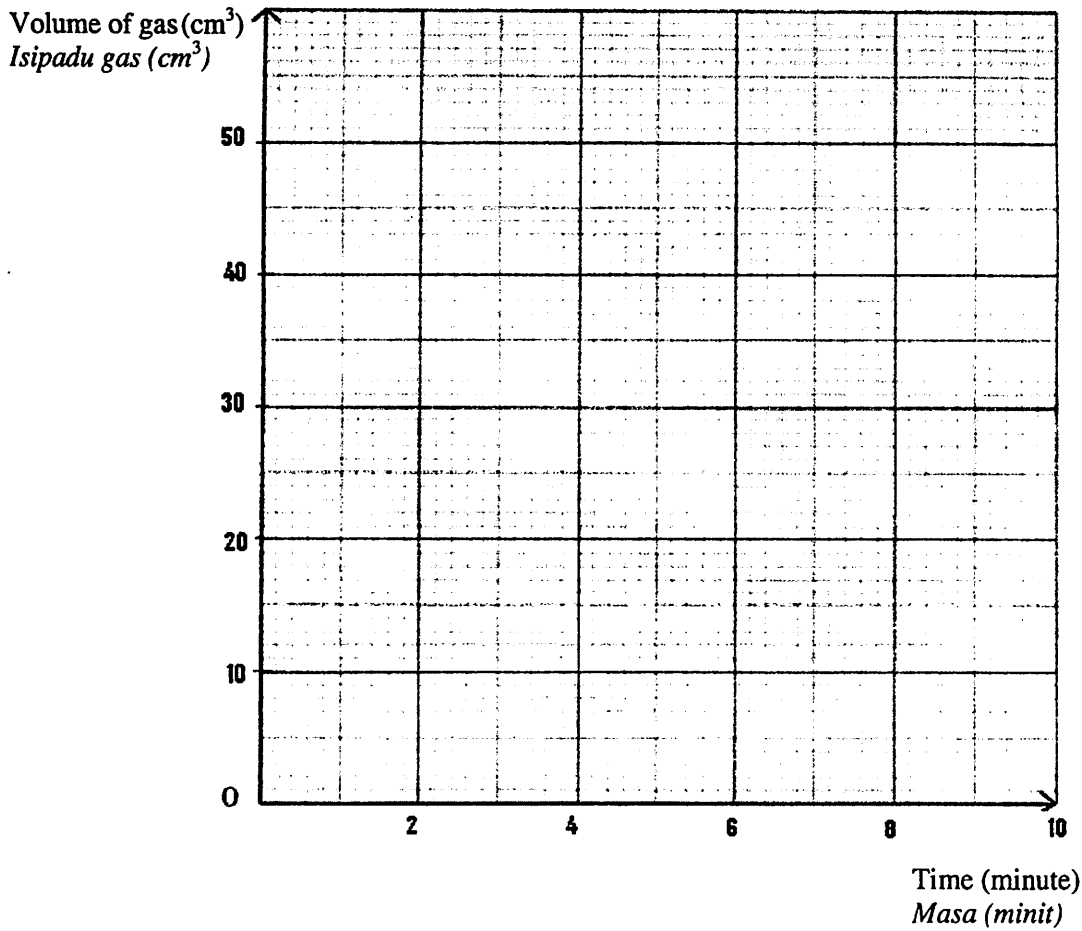


Diagram 2  
Rajah 2

The observation is obtained in Table 2.  
Pemerhatian dicatatkan dalam Jadual 2.

Substance Bahan	Bulb condition Keadaan mentol	
	Solid Pepejal	Molten Cecair
P	Lights up Menyala	Lights up Menyala
Q	Not lights up Tidak Menyala	Not lights up Tidak Menyala
R	Not lights up Tidak Menyala	Lights up Menyala

Table 2 / Jadual 2



[2 marks]

b) Based on the graph that you had drawn,  
*Berdasarkan graf yang telah anda lukis,*

(i) state the relationship between the volume of gas P and time.  
*nyatakan hubungan di antara isipadu gas P dan masa.*

.....

[1 mark]

(ii) what is the volume of gas P collected at the fifth minute?  
*berapakah isipadu gas P yang yang dikumpul pada minit ke lima?*

.....

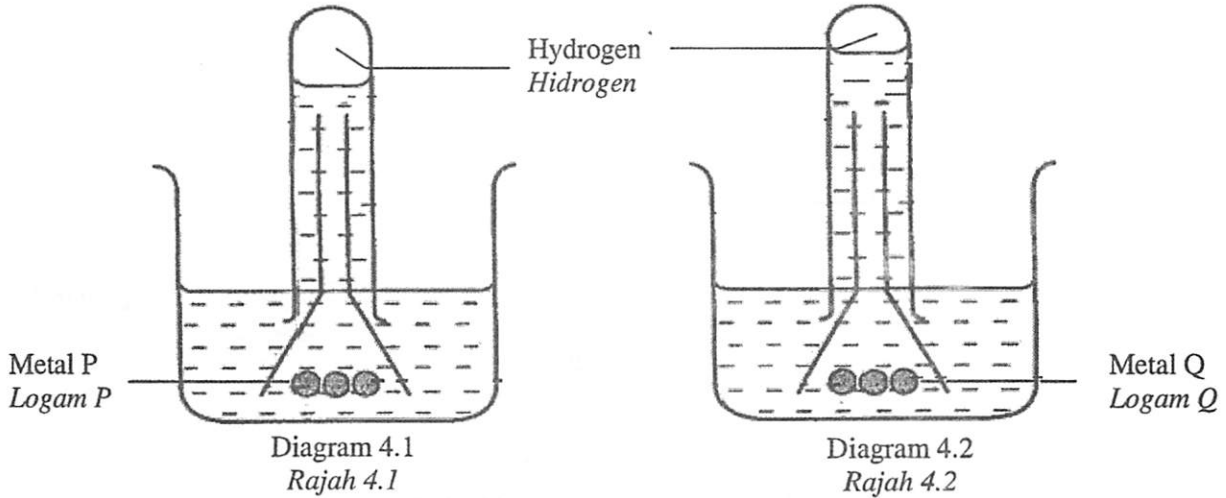
[1 mark]

c) State the responding variable in this experiment?  
*Nyatakan pembolehubah bergerakbalas dalam eksperimen ini?*

.....

[1 mark]

- 4 Diagram 4.1 and Diagram 4.2 show an experiment to compare the reactivity of metals P and Q with water.  
*Rajah 4.1 dan 4.2 menunjukkan eksperimen untuk membandingkan kereaktifan logam P dan Q dengan air.*



- (a) (i) State **one** observation from this experiment.  
*Nyatakan **satu** pemerhatian daripada eksperimen ini.*
- ..... [1 mark]
- (ii) Based on the observation in 4(a)(i), state **one** inference.  
*Berdasarkan kepada pemerhatian di 4(a)(i), nyatakan **satu** inferens.*
- ..... [1 mark]
- (b) State the variables in this experiment.  
*Nyatakan pembolehubah dalam eksperimen ini.*
- (i) Manipulated variable.  
*Pembolehubah dimanipulasi.*
- ..... [1 mark]
- (ii) Constant variable.  
*Pembolehubah bergerak balas.*
- ..... [1 mark]

- (c) Mark (✓) the metals which can react with water.  
 Tandakan (✓) logam-logam yang boleh bertindak balas dengan air.

Calcium  
 Kalsium

Sodium  
 Natrium

Stanum  
 Timah

[1 mark]

**Section B**  
 [30 marks]

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

- 5 Diagram 5 shows one type of neurone.  
 Rajah 5 menunjukkan sejenis neuron.

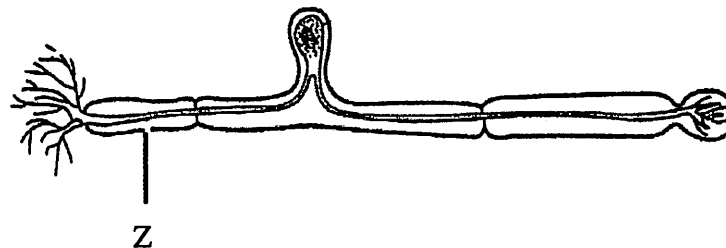


Diagram 5.1  
 Rajah 5.1

- (a) (i) Based on Diagram 5.1, mark (✓) the type of neurone in the box provided.  
 Berdasarkan Rajah 5.1, tanda (✓) jenis neuron dalam petak yang disediakan.

Sensory neurone <i>Neuron deria</i>	Relay neurone <i>Neuron perantaraan</i>	Motor neurone <i>Neuron motor</i>

(ii) State the function of this neurone.  
*Nyatakan fungsi neuron ini.*

.....  
[2 marks]

(b) (i) Name Z.  
*Namakan X.*

.....  
[1 mark]

(ii) State two functions of Z.  
*Nyatakan dua fungsi Z.*

1. ....  
2. ....  
[2 marks]

(c) Diagram 5.2 shows the pathway of an impulse.  
*Rajah 5.2 menunjukkan laluan suatu impuls.*

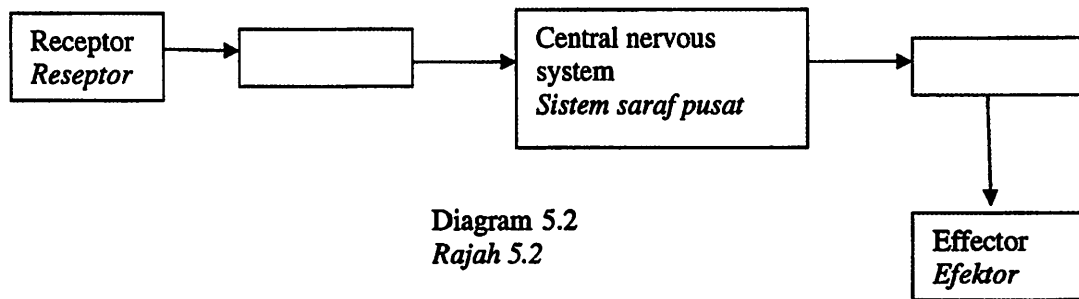


Diagram 5.2  
*Rajah 5.2*

Mark (✓) the location of neurone in Diagram 5.2 in the box provided.  
*Tanda (✓) kedudukan neuron dalam Rajah 5.2 dalam petak yang disediakan.*

- (d) What happen if the zygote is not separated completely?  
*Apa berlaku sekiranya zigot tidak terpisah dengan sempurna?*

.....

[1 mark]

- 8 Diagram 8 shows the structure of an atom.  
*Rajah 8 menunjukkan struktur suatu atom.*

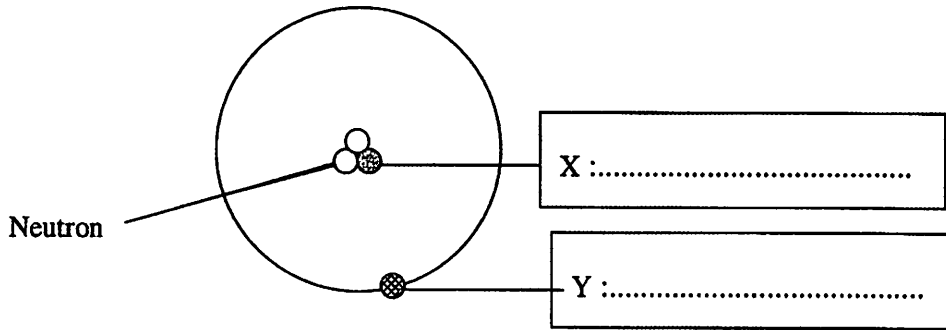


Diagram 8  
*Rajah 8*

- (a) Name the subatomic particle in the boxes provided.  
*Namakan zarah subatom dalam kotak yang disediakan.*

.....

[2 marks]

- (b) What is the charge of Y?  
*Apakah cas bagi Y?*

.....

[1 mark]

- (c) What is the nucleon number of this atom?  
*Berapakah nombor nukleon bagi atom ini?*

.....

[1 mark]

- (d) Hydrogen has three isotopes; Hydrogen-1, Hydrogen - 2 and Hydrogen-3. The isotopes of hydrogen are shown in Table 8.  
*Hidrogen mempunyai tiga isotop; Hidrogen-1, Hidrogen-2 dan Hidrogen-3. Isotop-isotop ini ditunjukkan dalam Jadual 8.*

(ii) State the function of this neurone.  
*Nyatakan fungsi neuron ini.*

.....  
[2 marks]

(b) (i) Name Z.  
*Namakan X.*

.....  
[1 mark]

(ii) State two functions of Z.  
*Nyatakan dua fungsi Z.*

1. ....  
2. ....  
[2 marks]

(c) Diagram 5.2 shows the pathway of an impulse.  
*Rajah 5.2 menunjukkan laluan suatu impuls.*

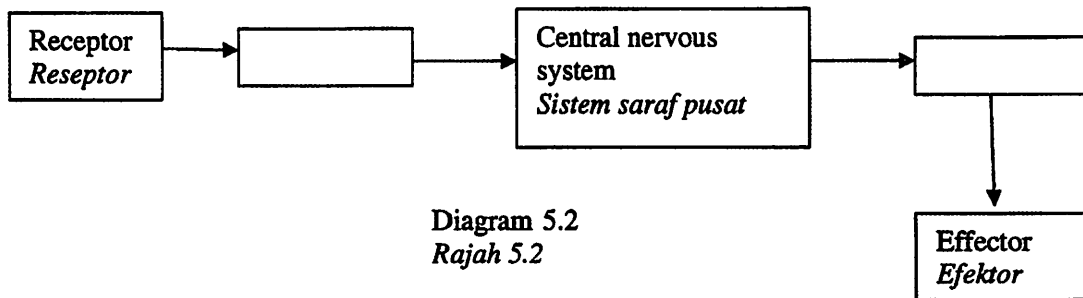


Diagram 5.2  
*Rajah 5.2*

Mark (✓) the location of neurone in Diagram 5.2 in the box provided.  
*Tanda (✓) kedudukan neuron dalam Rajah 5.2 dalam petak yang disediakan.*

- 6 Diagram 6 shows a cross section of human brain.  
*Rajah 6 menunjukkan keratan rentas otak manusia.*

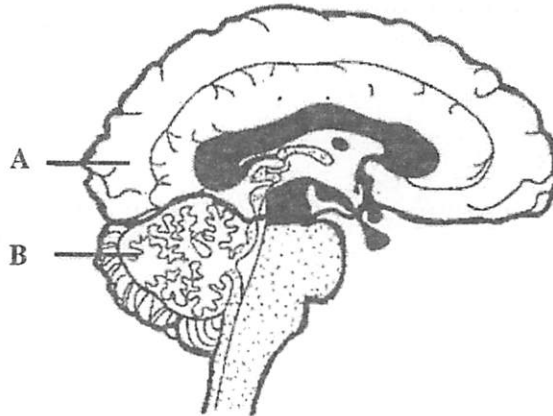


Diagram 6  
*Rajah 6*

- (a) Based on Diagram 6, name the structures labelled A and B.  
*Berdasarkan kepada Rajah 6, namakan struktur berlabel A dan B.*

A.....

B.....

[2 marks]

- (b) State **one** function of structure A.  
*Nyatakan **satu** fungsi struktur A.*

.....

[1 mark]

- (c) State **two** effects of drug abuse on the brain.  
*Nyatakan **dua** kesan penyalahgunaan dadah terhadap otak.*

1.....

2.....

[2 marks]

- (d) What will happen if structure **B** is injured?  
 Apakah kesan jika bahagian **B** tercedera?

.....  
 [1 mark]

- 7 The diagram 7 shows the formation of twins.  
 Rajah 7 menunjukkan pembentukan kembar.

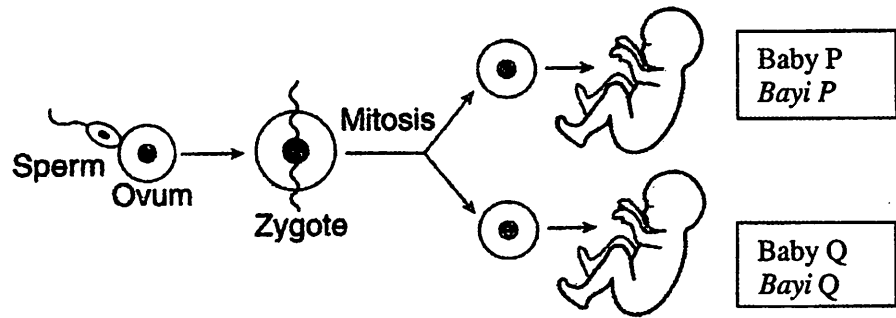


Diagram 7  
 Rajah 7

- (a) State the type of twins formed.  
 Nyatakan jenis kembar yang terbentuk.

.....  
 [1 mark]

- (b) How many chromosomes in  
 Berapakah kromosom yang terdapat dalam

(i) Ovum: .....  
 Ovum

(ii) Zygote: .....  
 Zigot

[2 marks]

- (c) If the sperm carry Y chromosome,  
 Jika sperma mengandungi kromosom Y,

(i) what is the chromosomes content of baby P?: .....  
 apakah kandungan kromosom bagi bayi P?:

(ii) what is the gender of baby Q?: .....  
 apakah jantina bagi bayi Q?

[2 marks]

- (d) What happen if the zygote is not separated completely?  
*Apa berlaku sekiranya zigot tidak terpisah dengan sempurna?*

.....

[1 mark]

- 8 Diagram 8 shows the structure of an atom.  
*Rajah 8 menunjukkan struktur suatu atom.*

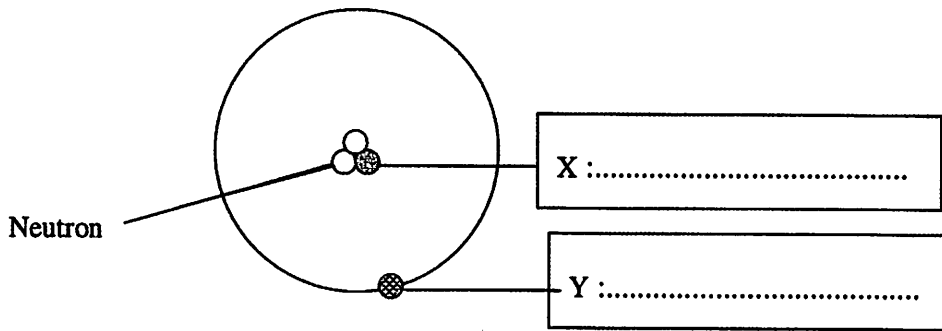


Diagram 8  
*Rajah 8*

- (a) Name the subatomic particle in the boxes provided.  
*Namakan zarah subatom dalam kotak yang disediakan.*

.....

[2 marks]

- (b) What is the charge of Y?  
*Apakah cas bagi Y?*

.....

[1 mark]

- (c) What is the nucleon number of this atom?  
*Berapakah nombor nukleon bagi atom ini?*

.....

[1 mark]

- (d) Hydrogen has three isotopes; Hydrogen-1, Hydrogen - 2 and Hydrogen-3. The isotopes of hydrogen are shown in Table 8.  
*Hidrogen mempunyai tiga isotop; Hidrogen-1, Hidrogen-2 dan Hidrogen-3. Isotop-isotop ini ditunjukkan dalam Jadual 8.*

Isotopes <i>Isotop</i>	Proton number <i>Nombor proton</i>	Number of neutrons <i>Bilangan neutron</i>
Hydrogen-1	1	0
Hydrogen-2	1	1
Hydrogen-3	1	2

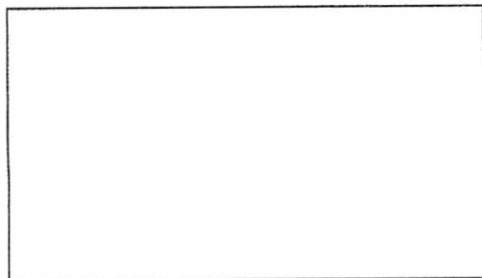
Table 8  
*Jadual 8*

Based on Table 8,  
*Berdasarkan Jadual 8,*

- (i) complete the sentence below.  
Isotopes are atoms of an element which have different number of nucleons but the same number of  
*Lengkapkan ayat di bawah.*  
*Isotop adalah atom-atom bagi suatu unsur yang mempunyai bilangan nukleon yang berlainan tetapi sama bilangan*

..... [1 mark]

- (ii) Draw the structure of Hydrogen -2 in the box provided below.  
*Lukis struktur Hidrogen-2 dalam petak yang disediakan di bawah.*



[1 mark]

- 9 Diagram 9 shows an experiment to study the reactivity of metals when react with oxygen.  
Rajah 9 menunjukkan satu eksperimen untuk mengkaji kereaktifan logam bila bertindak balas dengan oksigen.

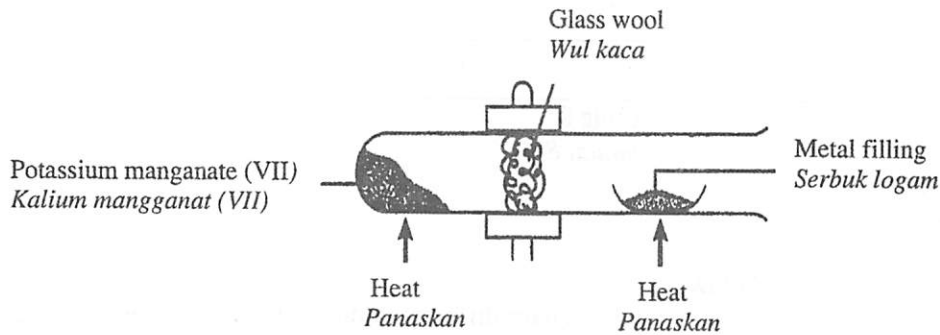


Diagram 9  
Rajah 9

Three types of metals X, Y and Z are used and the results are shown in the Table 9.  
Tiga jenis logam iaitu X, Y dan Z telah digunakan dan keputusan pemerhatian ditunjukkan dalam Jadual 9.

Metal Logam	Condition of burning Keadaan keterbakaran
X	Burns with bright light Terbakar dengan nyalaan terang
Y	Glowes dimly Membara malap
Z	Burns moderately Terbakar sederhana

Table 9.1  
Jadual 9.1

- (a) Based on Table 9.1, arrange the metals in the decreasing order.  
Berdasarkan Jadual 9.1, susun logam-logam dalam susunan menurun.

.....  
[1 mark]

- (b) What is the function of potassium manganate (VII)?  
Apakah fungsi kalium manganat (VII)?

.....  
[1 mark]

- (c) Explain why the glass wool is placed between the metal and potassium manganate (VII).  
*Terangkan mengapa kapas kaca diletakkan di antara logam dan kalium manganat (VII).*

.....  
[1 mark]

- (d) If the metals used in this experiment are magnesium, zinc and iron, what is metal X?  
*Jika logam-logam yang digunakan di dalam eksperimen ini adalah magnesium, zink dan besi, apakah logam X?*

.....  
[1 mark]

- (e) (i) In Table 9.2, mark (✓) the metal oxide which can be extract by carbon.  
*Dalam Jadual 9.2, tanda (✓) oksida logam yang boleh diekstrak oleh karbon.*

Magnesium oxide <i>Magnesium oksida</i>	Zinc oxide <i>Zink oksida</i>	Copper oxide <i>Kuprum oksida</i>

Table 9.2  
*Jadual 9.2*

- (ii) State a reason from your answer in (e) (i).  
*Nyatakan alasan daripada jawapan anda di (e) (i).*

.....  
[1 mark]

**Section C**  
[20 marks]

**Answer Question 10 and either Question 11 or Question 12.**

Write your answers on pages 18-20.

**Jawab Soalan 10 dan mana-mana satu daripada Soalan 11 atau Soalan 12.**

**Tuliskan jawapan anda di halaman 18-20.**

- 10** Study the following statement;  
*Kaji pernyataan berikut;*

<p>Thermal conductivity of metals and non metals are different <i>Kekonduksian haba bagi logam dan bukan logam adalah berbeza</i></p>
---

You are given a iron rod, glass rod, a thumbtack, wax and a stop watch.  
*Anda diberikan rod kuprum, rod kaca, satu paku tekan, lilin dan jam randik.*

- (a) Suggest a hypothesis to investigate the above statement.  
*Cadangkan satu hipotesis untuk menyiasat pernyataan di atas.*

[1 mark]

(b) Describes one experiment to test your hipotesis in 10(a) based on the following criteria:  
*Huraikan satu eksperimen untuk mengkaji hipotesis di 10(a) berdasarkan criteria berikut:*

- (i) Aim of the experiment.  
*Tujuan eksperimen.* [1 mark]
- (ii) Identification of variables.  
*Mengenalpasti pembolehubah.* [2 marks]
- (iii) List of apparatus.  
*Senarai alat radas.* [1 mark]
- (iv) Procedure.  
*Kaedah.* [4 marks]
- (v) Tabulation of data.  
*Penjadualan data.* [1 mark]

11 There are two types of variation, continuous variation and discontinuous variation.  
*Terdapat dua jenis variasi, variasi selanjar dan variasi tak selanjar.*

(a) Give **three** differences between continuous variation and discontinuous variation. Give **one** importance of variation.  
*Berikan tiga perbezaan antara variasi selanjar dan variasi tak selanjar. Beri satu kepentingan variasi.*

[4 marks]

(b) Diagram 11 shows various characteristics of human being.  
*Rajah 11 menunjukkan ciri-ciri berbeza yang terdapat pada manusia.*

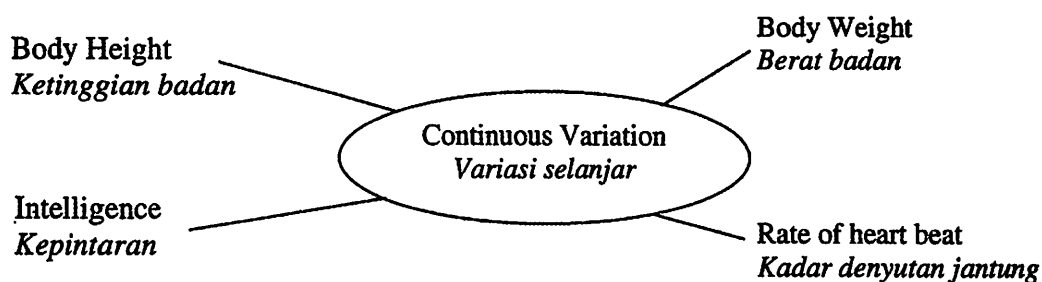


Diagram 11  
*Rajah 11*

Study the above characteristics. Explain how you would develop a concept based on the information in Diagram 11.

*Kaji ciri-ciri di atas. Terangkan bagaimana anda membina satu konsep berdasarkan maklumat dalam Rajah 11.*

Your explanation of the concept should include the following:

*Penerangan anda tentang konsep itu hendaklah berdasarkan kepada perkara berikut:*

- Identify two common characteristics  
*Kenalpasti dua ciri sepunya* [2 marks]
- Give one other example of continuous variation  
*Berikan satu lain variasi selanjor* [1 mark]
- Give one example of non-continuous variation and the reason  
*Beri satu contoh bukan variasi selanjor dan sebabnya* [2 marks]
- Relate the common characteristics to construct the concept of continuous variation  
*Hubungkaitkan ciri- ciri sepunya untuk membina konsep variasi selanjor* [1 mark]

- 12 (a) State **three** methods of purification. Describe **one** of these methods.  
*Nyatakan tiga kaedah penulenan. Terangkan satu daripada kaedah tersebut.*

[4 marks]

- (b) A Science teacher instructs students form 4 Bestari to carry out an experiment to obtain pure water from sea water. Explain how form 4 Bestari can solve this problem. Your answer should include the following aspects:

*Guru Sains mengarahkan pelajar tingkatan 4 Bestari menjalankan eksperimen untuk mendapatkan air tulen daripada air laut. Terangkan bagaimana pelajar tingkatan 4 Bestari menyelesaikan masalah ini. Penerangan anda mestilah mengandungi perkara berikut:*

- Problem statement  
*Penyataan masalah* [1 mark]
- Name of the method used  
*Nama kaedah yang digunakan* [1 mark]
- Steps of the method used  
*Langkah-langkah yang perlu dilakukan dalam kaedah itu* [4 marks]

**END OF QUESTION PAPER**  
**KERTAS SOALAN TAMAT**



.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....