

4541/3  
Chemistry  
Kertas 3  
September  
1 1/2 hours



Name

Form

**PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA  
SEKOLAH MENENGAH MALAYSIA (PKPSM)  
CAWANGAN MELAKA**

**PEPERIKSAAN PERCUBAAN  
SIJIL PELAJARAN MALAYSIA 2007**

**CHEMISTRY**

Kertas 3

Satu jam tiga puluh minit

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Tuliskan nama dan tingkatan pada ruang yang disediakan.*
2. *Kertas soalan ini adalah dalam dwi bahasa..*
3. *Calon hendaklah membaca arahan pada halaman 2 dan 3.*

Untuk kegunaan pemeriksa sahaja		
Soalan	Markah Penuh	Markah diperolehi
1	15	
2	18	
3	Jawapan 15	
	Laporan 2	
Jumlah	50	

**Kertas soalan ini mengandungi 15 halaman bercetak**

**INFORMATION FOR CANDIDATES**

1. This question paper consists of **three** questions. Answer **all** questions.
2. Write your answer for **Question 1 and 2** in the spaces provided in the question paper.
3. You may use equations, diagrams, tables, graph and other suitable methods to explain your answer.
4. Show your working, it may help you to get marks.
5. If you wish to change your answer, neatly cross out the answer that you have done. Then write down the new answer.
6. The diagrams in the questions are not drawn to scale unless stated.
7. Marks allocated for each question or part question are shown in brackets.
8. The time suggested to answer each of the questions is 30 minutes.
9. You may use a non-programmable scientific calculator.
10. Hand in your answer sheets at the end of the examination.

Marks awarded :

<b>Mark</b>	<b>Description</b>
3	<b>Excellent</b> : The best response
2	<b>Satisfactory</b> : An average response
1	<b>Weak</b> : An inaccurately response
0	No response <u>or</u> wrong response

Answer all question.

1. Figure 1 shows an experiment to construct an electrochemical series by measuring the voltage of a pair of metals in a simple voltaic cell

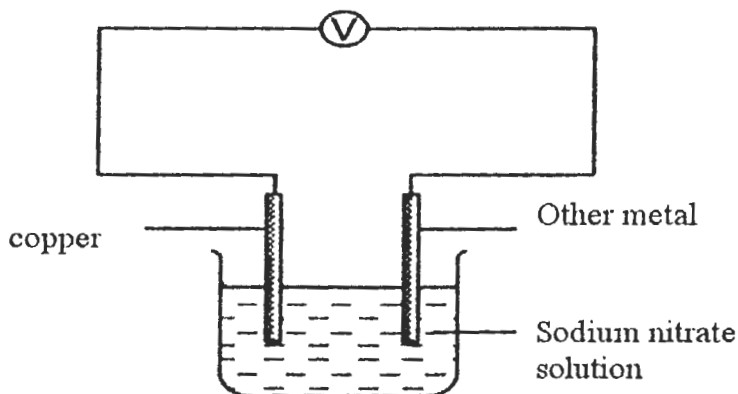


Figure 1

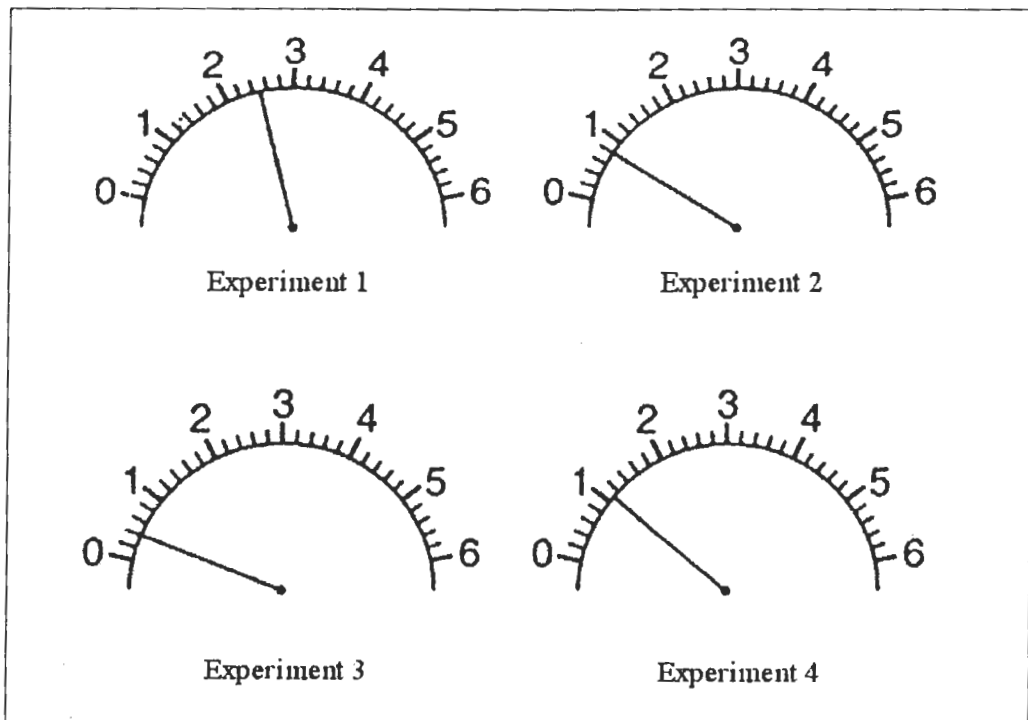


Figure 2

Figure 2 shows the reading on the voltmeter in different sets of experiment

(a) Write the voltage for each experiment in the spaces provided in the table below

Experiment	Positive terminal	Negative terminal	Voltage/V
1	Copper	magnesium	
2	Copper	iron	
3	Copper	lead	
4	Copper	zinc	

(b) Arrange the metals in (a) in the electrochemical series, starting with the metal with the highest tendency to release electron.

.....  
[3 marks]

(c) What is the relationship between the relative position of a pair of metals in the electrochemical series with the voltage of the voltaic cell constructed?

.....  
[3 marks]

(d) Write the equation of the reactions which occur at the negative terminal for Experiment 1

.....  
[3 marks]

(e) Predict the voltage of the voltaic cell formed by tin (stanum) and copper

.....  
[3 marks]

2. The table below shows the data obtained in two experiments carried out by a student to study the decomposition of hydrogen peroxide.

Times/minutes	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5
Experiment I Volume/cm <sup>3</sup>	0	3.0	5.5	8.0	10.5	13.0	15.0	16.5	18.0	19.5	20.5	21.5	22.5	23.5
Experiment II Volume/cm <sup>3</sup>	0	6.0	10.5	15.0	18.5	21.5	24.5	27.0	29.0	31.0	X	34.0	35.0	36.0

In Experiment I, 8 cm<sup>3</sup> of 2.0 mol dm<sup>-3</sup> hydrogen peroxide solution is added to 42 cm<sup>3</sup> of distilled water and 2g of manganese(IV) oxide. The total volume of gas produced was recorded every 0.5 minute.

In Experiment II, 8 cm<sup>3</sup> of 3.0 mol dm<sup>-3</sup> hydrogen peroxide solution is added to 42 cm<sup>3</sup> of distilled water and 2 g of manganese(IV) oxide. The total volume of gas produced was recorded every 0.5minute.

- (a) Name the gas produced in the above experiment.

.....

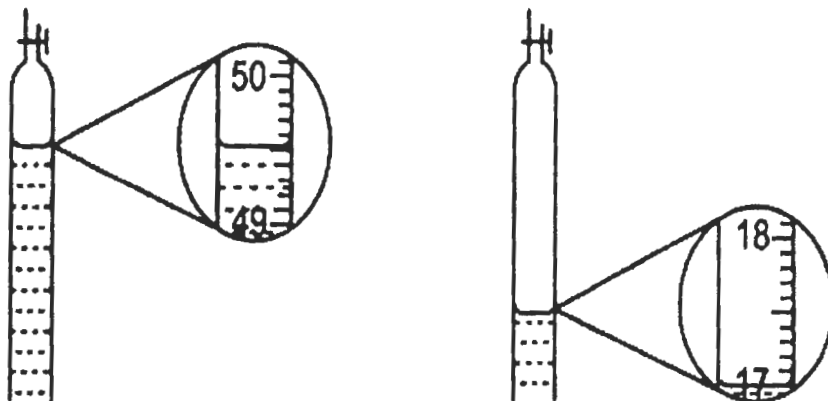
[3 marks]

- (b) State the hypothesis of the experiment.

.....

[3 marks]

- (c) The figure below shows the burette reading at 0 minute and the burette reading at 5 minutes respectively in Experiment II.



Determine the value of X, the volume of gas collected at 5 minute.

.....  
[3 marks]

- (d) (i) Using the same axes, plot the graphs of the volume of gas against time for Experiment I and II on the same graph paper.

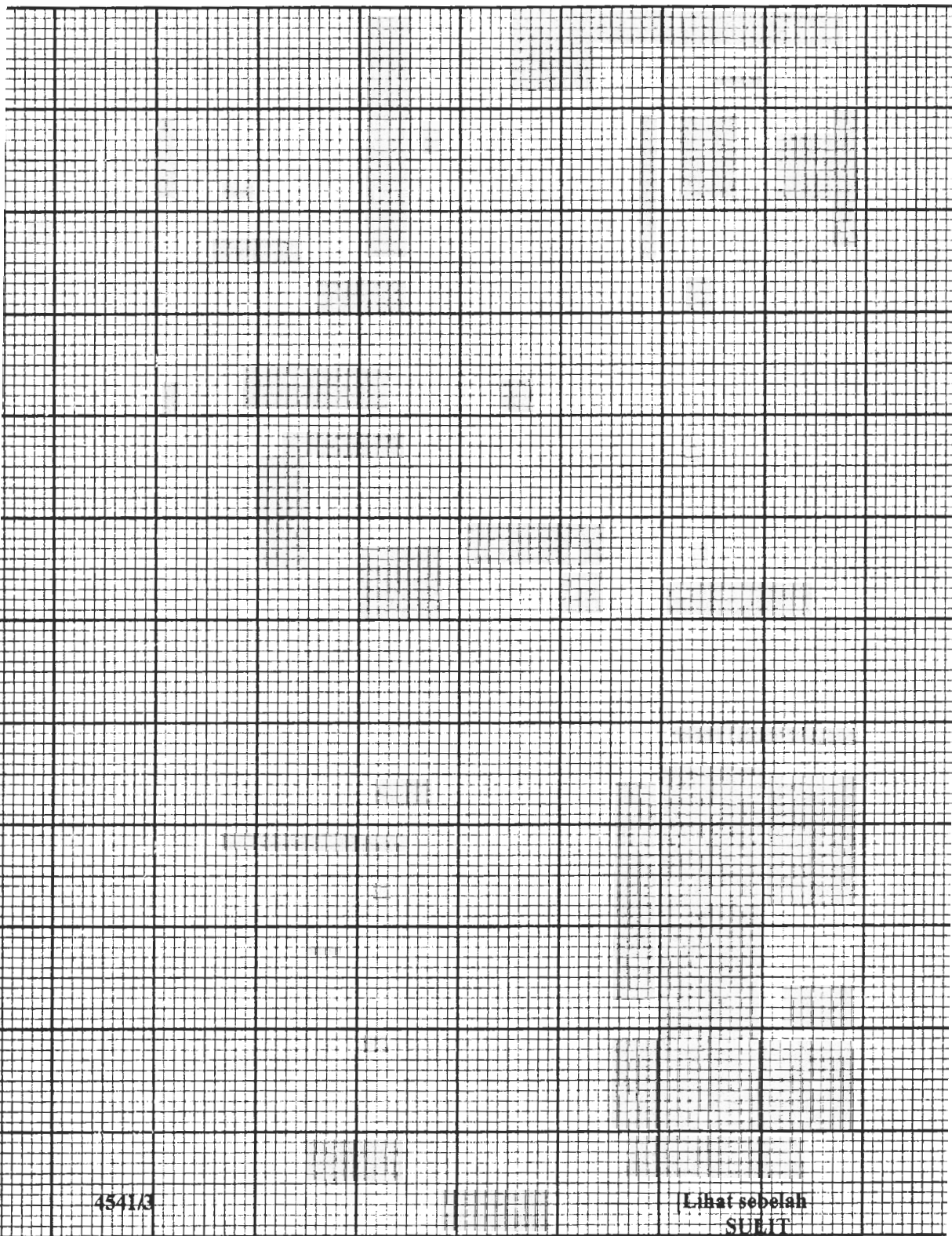
[3 marks]

- (ii) Predict the volume of the gas produced at 7.5 minute for Experiment II from the graph in (d)(i).

.....  
[3 marks]

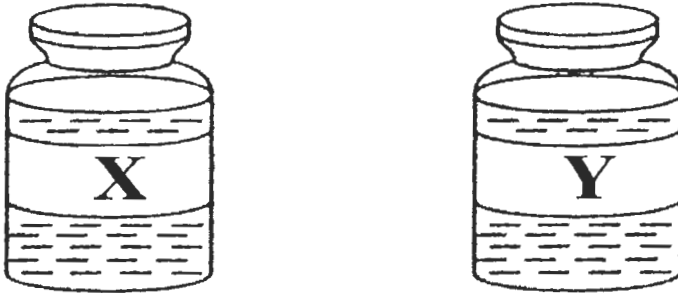
- e) What inference can be made in these experiments?

.....  
[3 marks]





3. Rajah di bawah menunjukkan dua botol bahan kimia yang berlabel X dan Y . Bahan tersebut ialah heksana dan heksena



Anda dikehendaki merancang satu eksperimen untuk menentukan dua bahan kimia ini. Dengan ujian ini bahan X dan Y dapat di label dengan betul. Jawapan anda hendaklah mengandungi perkara berikut

- (a) Penyataan masalah
- (b) Pembolehubah yang terlibat
- (c) Senarai bahan dan radas
- (d) Prosedur
- (e) Penjadualan data

[15 markah]

**KERTAS SOALAN TAMAT**