

NAMA : .....

KELAS : .....

**PEPERIKSAAN PERCUBAAN****SIJIL PELAJARAN MALAYSIA 2015****4541/3****CHEMISTRY**

Kertas 3

September

1 ½ jam

1 jam 30 minit

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**DO NOT OPEN THIS PAPER UNTIL YOU ARE TOLD TO DO SO**  
**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Kertas soalan ini adalah dalam dwibahasa.*
2. *Soalan dalam Bahasa Inggeris mendahului soalan yang sepadan dalam Bahasa Melayu.*
3. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam Bahasa Inggeris atau Bahasa Melayu.*
4. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Untuk Kegunaan Pemeriksa		
Soalan	Markah penuh	Markah diperoleh
1	15	
2	18	
3	17	
JUMLAH		

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**Kertas soalan ini mengandungi 11 halaman bercetak**

Answer **all** questions.  
*Jawab semua soalan.*

1. Diagram 1.1 shows the apparatus set-up for an experiment to determine the melting point of naphthalene. Solid naphthalene is heated in a water bath until melts completely.  
*Rajah 1.1 menunjukkan susunan radas bagi bagi eksperimen untuk menentukan takat lebur naftalena. Pepejal naftalena dipanaskan dalam kukus air hingga melebur dengan lengkap.*

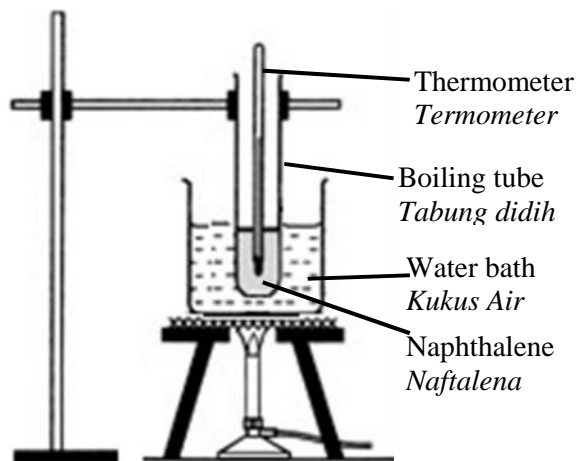


Diagram 1.1  
*Rajah 1.1*

The readings of the temperature of naphthalene are recorded every 30 seconds from  $60.0^{\circ}\text{C}$  until  $95.0^{\circ}\text{C}$ .

Table 1.1 shows the thermometer readings of the experiment.

*Bacaan suhu naftalene telah direkodkan bagi setiap 30 saat daripada  $60.0^{\circ}\text{C}$  hingga  $95.0^{\circ}\text{C}$ .*

*Jadual 1.1 menunjukkan bacaan termometer bagi eksperimen itu.*

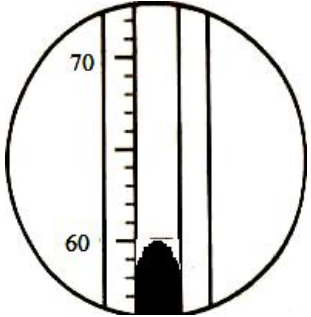
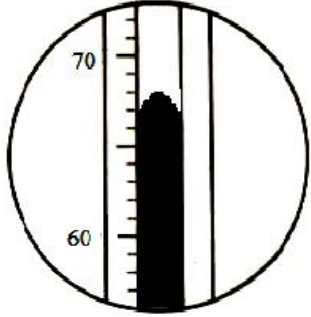
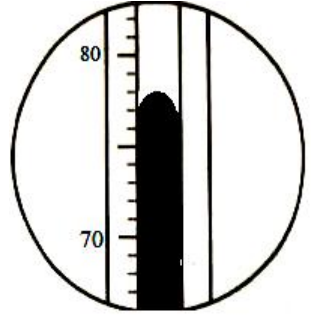
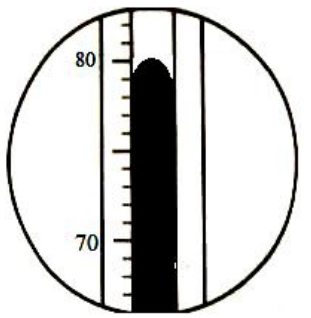
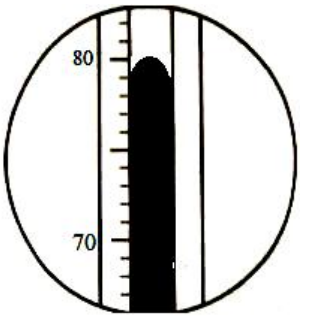
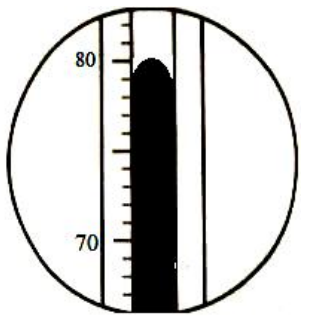
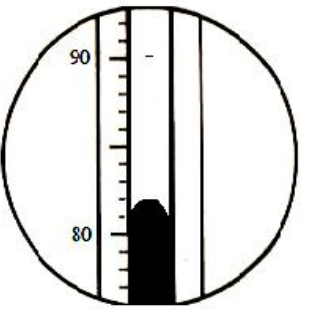
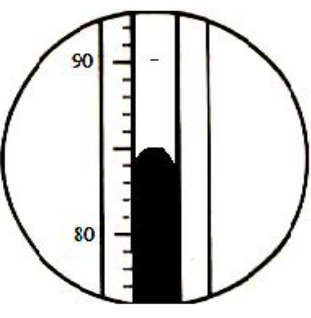
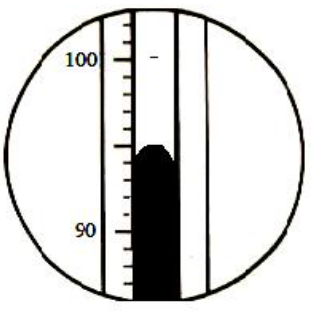
		
Initial temperature:..... <i>Suhu awal</i>	Temperature at 30s: ..... <i>Suhu pada 30 saat</i>	Temperature at 60s:..... <i>Suhu pada 60 saat</i>
		
Temperature at 90s:..... <i>Suhu pada 90 saat</i>	Temperature at 120s: ..... <i>Suhu pada 120 saat</i>	Temperature at 150s: ..... <i>Suhu pada 150 saat</i>
		
Temperature at 180s: ..... <i>Suhu pada 180 saat</i>	Temperature at 210s: ..... <i>Suhu pada 210 saat</i>	Temperature at 240s: ..... <i>Suhu pada 240 saat</i>

Table 1.1  
*Jadual 1.1*

- (a) Record the temperature for every 30 second interval as shown in Table 1.1.  
*Rekodkan suhu bagi setiap sela masa 30 saat dalam Jadual 1.1*

[3 marks]

(b) (i) Plot a graph of temperature against time for the heating of naphthalene on the graph paper given in page 5.  
*Plotkan graf suhu melawan masa bagi pemanasan naftalena di atas kertas graf yang disediakan pada muka surat 5.*

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[3 marks]

(ii) State the melting point of naphthalene, and show on the graph how you determine this melting point.  
*Nyatakan takat lebur naftalena, dan tunjukkan di atas graf bagaimana anda tentukan takat lebur ini.*

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[3 marks]

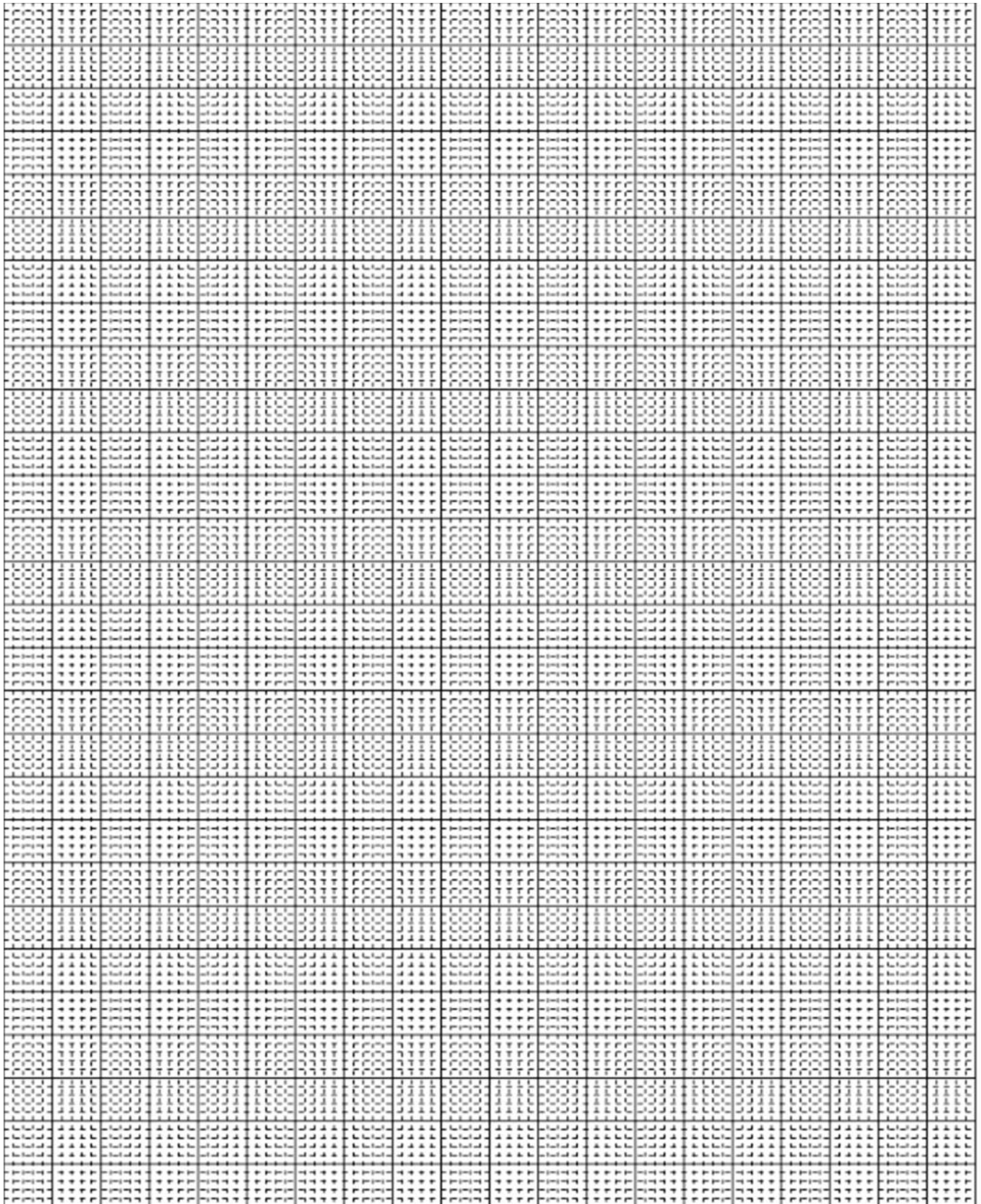
(c) The temperature of naphthalene did not change from 90<sup>th</sup> second until the 150<sup>th</sup> second during the melting process. Explain why.  
*Suhu naftalena tidak berubah dari saat ke-90 hingga saat ke-150 semasa proses peleburan itu. Terangkan mengapa.*

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[3 marks]

(b) (i)



- d) Naphthalene is an example of a covalent compound and Magnesium chloride is an example of an ionic compound. Classify the following into covalent or ionic compounds.

*Naftalena adalah satu contoh sebatian kovalen manakala Magnesium klorida adalah satu contoh sebatian ion. Kelaskan sebatian berikut kepada sebatian kovalen atau sebatian ion.*

Potassium bromide, zinc nitrate, glucose, methanol,  
ethyl ethanoate, sodium chloride

*Kalium bromida, zink nitrat, glukosa, metanol,  
etil etanoat, natrium klorida*

Ionic compound <i>Sebatian ion</i>	Covalent compound <i>Sebatian kovalen</i>

[3 marks]

	3
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**TOTAL**

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2. Table 2.1 shows the observation in five test tubes used to investigate the effect of other metals on rusting. A mixture of jelly solution, potassium hexacyanoferrate(III),  $K_3Fe(CN)_6$  solution and phenolphthalein were used as medium in each test tube. The observations were recorded after one day.

*Jadual 2.1 menunjukkan pemerhatian dalam lima buah tabung uji yang digunakan untuk menyiasat kesan logam lain ke atas pengurangan. Medium yang digunakan di dalam setiap tabung uji adalah campuran larutan agar, larutan kalium heksasianoferat(III),  $K_3Fe(CN)_6$  dan fenolftalein. Pemerhatian direkod selepas satu hari.*

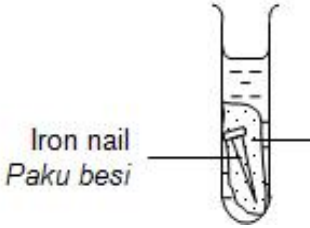
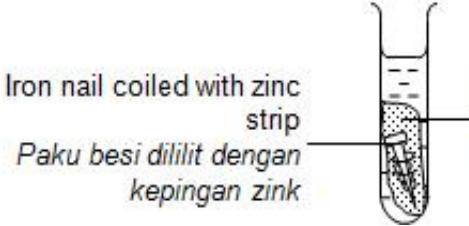
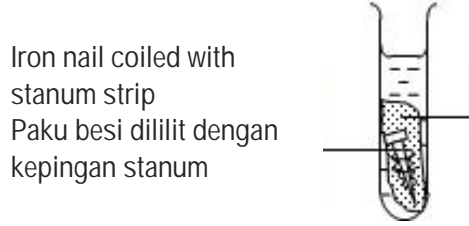
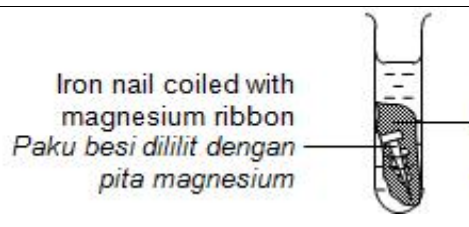
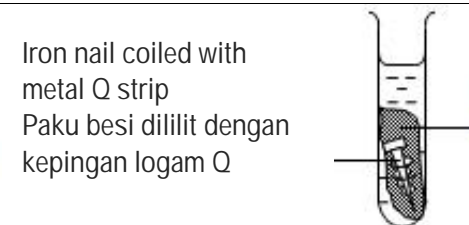
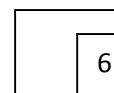
Test tube 1 <i>Tabung uji 1</i>	 <p>Iron nail <i>Paku besi</i></p>	<p>Very low intensity of blue colour Very low intensity of pink colour Keamatan warna biru sangat rendah Keamatan warna merah jambu sangat rendah</p>
Test tube 2 <i>Tabung uji 2</i>	 <p>Iron nail coiled with zinc strip <i>Paku besi dililit dengan kepingan zink</i></p>	<p>No blue spot Low intensity of pink colour Tiada tompokan biru Keamatan warna merah jambu sangat rendah</p>
Test tube 3 <i>Tabung uji 3</i>	 <p>Iron nail coiled with stanum strip <i>Paku besi dililit dengan kepingan stanum</i></p>	<p>Low intensity blue of blue colour Low intensity of pink colour Keamatan warna biru rendah Keamatan warna merah jambu rendah</p>
Test tube 4 <i>Tabung uji 4</i>	 <p>Iron nail coiled with magnesium ribbon <i>Paku besi dililit dengan pita magnesium</i></p>	<p>No blue spot High intensity of pink colour Tiada tompokan biru Keamatan warna merah jambu tinggi</p>
Test tube 5 <i>Tabung uji 5</i>	 <p>Iron nail coiled with metal Q strip <i>Paku besi dililit dengan kepingan logam Q</i></p>	<p>High intensity blue of blue colour Low intensity of pink colour Keamatan warna biru sangat tinggi Keamatan warna merah jambu rendah</p>

Table 2.1 // *Jadual 2.1*

- (a) State the observation and inference for test tube 2, 3 and 4.  
*Nyatakan pemerhatian dan inferens untuk tabung uji 2, 3 dan 4.*

Test tube <i>Tabung uji</i>	Observation <i>Pemerhatian</i>	Inference <i>Inferens</i>
<b>2</b>		
<b>3</b>		
<b>4</b>		

[6 marks]



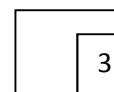
- (b) State the hypothesis for the experiment.  
*Nyatakan hipotesis bagi eksperimen ini.*

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.....

.....

[3 marks]



- (c) For this experiment, state:  
*Bagi eksperimen ini, nyatakan*

(i) The manipulated variable :  
*Pembolehubah dimanipulasi :*

.....

(ii) The responding variable :  
*Pembolehubah bergerakbalas :*

.....

(iii) The constant variable :  
*Pembolehubah dimalarkan :*

.....

[3 marks]





(d) State the one operational definition for the experiment.  
*Nyatakan satu definisi secara operasi bagi eksperimen ini.*

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

[3 marks]

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(e) Based on the observation of test tube 5 in Table 2.1, predict metal Q.  
*Berdasarkan pemerhatian bagi tabung uji 5 dalam Jadual 2.1, ramalkan logam Q.*

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[3 marks]

3
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**TOTAL**

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The value of the heat of neutralization for the reaction between sodium hydroxide solution and strong acid solution is higher than the value of the heat of neutralization for the reaction between sodium hydroxide solution and weak acid solution.

Nilai haba peneutralan bagi tindak balas antara larutan natrium hidroksida dengan larutan asid kuat lebih tinggi daripada haba peneutralan larutan natrium hidroksida dengan larutan asid lemah.

Based on the above statement, you are required to design an experiment to determine and compare the heat of neutralization between sodium hydroxide solution with a named strong acid solution and a weak acid solution.

*Berdasarkan pernyataan di atas, anda dikehendaki merancang eksperimen untuk menentukan haba peneutralan di antara larutan natrium hidroksida dengan satu larutan asid kuat dan satu larutan asid lemah yang dinamakan.*

Your planning should include the followings :

*Perancangan anda hendaklah mengandungi perkara-perkara berikut:*

- (a) Problem Statement  
*Pernyataan masalah*
- (b) Hypothesis  
*Hipotesis*
- (c) All the variables  
*Semua pemboleh ubah yang terlibat*
- (c) List of materials and apparatus  
*Senarai bahan dan alat radas*
- (d) Procedure of the experiment  
*Prosedur eksperimen*
- (e) Tabulation of data  
*Penjadualan data*

[17 marks]

**END OF QUESTION PAPER  
KERTAS SOALAN TAMAT**

**INFORMATION FOR CANDIDITES**

1. This question paper consists of three questions. Answer all questions.
2. Write your answers for **Question 1 and Question 2** in the spaces provided in the question paper.
3. Write your answers for **Question 3** on the “helaian tambahan”. You may use equation, diagrams, tables, graphs 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. Mark allocated for each question or part question are shown in brackets.
8. The time suggested to answers **Question 1 and Question 2** is 45 minutes and **Question 3** is 45 minutes.
9. You may use a non-programmable scientific calculator.
10. Hand your answer sheets at the end of the examination.

Marks awarded:

Mark	Description
3	Excellent : The best response
2	Satisfactory : An average response
1	Weak : An inaccurate response
0	No response or wrong response