

**Peraturan pemarkahan Kertas 3**

**Modul Kecemerlangan Tingkatan 5**

<i>Question</i>	<i>Answer</i>	<i>Marks</i>												
1 (a) (i)	Depth of immersion/ <i>d</i> /Kedalaman rendaman (reject : D)	1												
1 (a) (ii)	Bouyant force/ $F_B$ /Daya apung/ <i>M</i> /Mass of displaced water/Jisim air tersesar <b>Reject:</b> m/ mass of water	1												
1 (a) (iii)	Density of rod/Density of water/ Ketumpatan rod/Ketumpatan air/Diameter rod keluli/gravitational acceleration/g/pecutan graviti  <b>Reject:</b> Lenght of steel rod/ mass of steel rod/weight of steel rod/mass of empty beaker/volume of steel rod/volume of water in eureka can	1												
1 (b) (i)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><i>d/cm</i></th> <th style="text-align: center;"><i>m /g</i></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2.0</td> <td style="text-align: center;">66.1</td> </tr> <tr> <td style="text-align: center;">3.0</td> <td style="text-align: center;">69.7</td> </tr> <tr> <td style="text-align: center;">4.0</td> <td style="text-align: center;">73.8</td> </tr> <tr> <td style="text-align: center;">5.0</td> <td style="text-align: center;">77.6</td> </tr> <tr> <td style="text-align: center;">6.0</td> <td style="text-align: center;">81.4</td> </tr> </tbody> </table> <p style="margin-left: 40px;">→ All 5 values of m correct with 1 decimal place – 2 marks → All 5 values of m correct without 1 decimal place – 1 mark  → 3 or 4 values of m correct with 1 decimal place – 1 mark → 3 or 4 values of m correct without 1 decimal place – 0 mark (Mark in spaces provided)</p>	<i>d/cm</i>	<i>m /g</i>	2.0	66.1	3.0	69.7	4.0	73.8	5.0	77.6	6.0	81.4	2
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1(b)(iv)	<p><b>Table for <math>d, m, M</math> and <math>F_B</math></b>  <i>Jadual <math>d, m, M</math> dan <math>F_B</math></i></p> <table border="1"> <thead> <tr> <th><math>d/cm</math></th> <th><math>m/g</math></th> <th><math>M/g</math></th> <th><math>F_B/N</math></th> </tr> </thead> <tbody> <tr> <td>2.0</td> <td>66.1</td> <td>7.5</td> <td>0.08</td> </tr> <tr> <td>3.0</td> <td>69.7</td> <td>11.1</td> <td>0.11</td> </tr> <tr> <td>4.0</td> <td>73.8</td> <td>15.2</td> <td>0.15</td> </tr> <tr> <td>5.0</td> <td>77.6</td> <td>19.0</td> <td>0.19</td> </tr> <tr> <td>6.0</td> <td>81.4</td> <td>22.8</td> <td>0.23</td> </tr> </tbody> </table> <p>atau</p> <table border="1"> <thead> <tr> <th><math>d/cm</math></th> <th><math>m/g</math></th> <th><math>M/g</math></th> <th><math>F_B/N</math></th> </tr> </thead> <tbody> <tr> <td>2.0</td> <td>66.1</td> <td>7.5</td> <td>0.075</td> </tr> <tr> <td>3.0</td> <td>69.7</td> <td>11.1</td> <td>0.111</td> </tr> <tr> <td>4.0</td> <td>73.8</td> <td>15.2</td> <td>0.152</td> </tr> <tr> <td>5.0</td> <td>77.6</td> <td>19.0</td> <td>0.190</td> </tr> <tr> <td>6.0</td> <td>81.4</td> <td>22.8</td> <td>0.228</td> </tr> </tbody> </table> <table border="1" style="margin-left: 200px;"> <thead> <tr> <th><math>F_B/N</math></th> </tr> </thead> <tbody> <tr> <td>0.07</td> </tr> <tr> <td>0.11</td> </tr> <tr> <td>0.15</td> </tr> <tr> <td>0.19</td> </tr> <tr> <td>0.23</td> </tr> </tbody> </table> <p>or</p> <p>Give a tick (✓) based on the following:  <i>Beri tanda(✓)berdasarkan yang berikut;</i></p> <p>A • Columns <math>H, S</math> and <math>v</math> ✓A  <i>Lajur <math>H, S</math> dan <math>v</math></i></p> <p>B • Correct units for <math>H, S</math> and <math>v</math> ✓B  <i>Unit untuk <math>H, S</math> dan <math>v</math></i></p>	$d/cm$	$m/g$	$M/g$	$F_B/N$	2.0	66.1	7.5	0.08	3.0	69.7	11.1	0.11	4.0	73.8	15.2	0.15	5.0	77.6	19.0	0.19	6.0	81.4	22.8	0.23	$d/cm$	$m/g$	$M/g$	$F_B/N$	2.0	66.1	7.5	0.075	3.0	69.7	11.1	0.111	4.0	73.8	15.2	0.152	5.0	77.6	19.0	0.190	6.0	81.4	22.8	0.228	$F_B/N$	0.07	0.11	0.15	0.19	0.23	2
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1 (c)	<p><b>Graph of <math>F_B</math> against <math>d</math></b>  Give a tick (✓) based on the following:</p> <p>A • <math>F_B</math> at the <math>y</math>-axis and <math>d</math> at the <math>x</math>-axis ✓1  <i><math>F_B</math> pada paksi-<math>y</math> dan <math>d</math> pada paksi-<math>x</math></i></p> <p>B • Quantity at both axes labelled with correct unit. ✓2  <i>Kuantiti di kedua-dua paksi dilabel dengan unit unit.</i></p> <p>C • Uniform and even scale at both axes ✓3  <i>Skala pada paksi seragam dan genap</i></p> <p>D • 5 points plotted correctly ✓4✓5  <i>5 titik diplot dengan betul</i>  [Note : 3-4 points plotted correctly ✓4 ]</p>	5																																																						

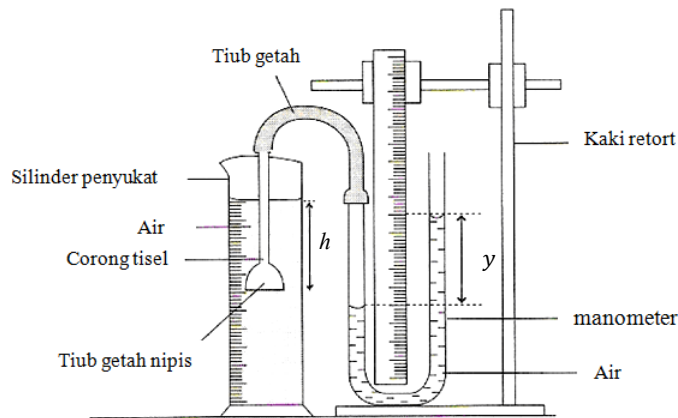
	<p>[Catatan : 3-4 titik titik diplot dengan betul ✓4 ]</p> <p><b>E</b> • Draw a line of best fit ✓6 Lukis satu garis lurus terbaik</p> <p><b>F</b> • Minimum size of graph 5 x 4 larger squares ✓7 Saiz minima graf 5 x 4 petak besar (larger square / petak besar : 2 cm x 2 cm) (From the origin to the last point / daripada titik asalan ke titik akhir)</p> <p><b>Marks awarded / markah diberi:</b></p> <table border="1"> <thead> <tr> <th>Number of ✓</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>7 ✓</td> <td>5</td> </tr> <tr> <td>5-6 ✓</td> <td>4</td> </tr> <tr> <td>3-4 ✓</td> <td>3</td> </tr> <tr> <td>2 ✓</td> <td>2</td> </tr> <tr> <td>1 ✓</td> <td>1</td> </tr> </tbody> </table>	Number of ✓	Marks	7 ✓	5	5-6 ✓	4	3-4 ✓	3	2 ✓	2	1 ✓	1	
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7 ✓	5													
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3-4 ✓	3													
2 ✓	2													
1 ✓	1													
1 (d)	<i>F<sub>B</sub> directly proportional to d</i>	1												
	<b>TOTAL MARKS</b>	<b>16</b>												

Skema No. 2

No. Soalan	Peraturan Pemarkahan	Markah
(a)(i)	- Mengekstrapolasikan graf sehingga suhu = 0 °C. - Menyatakan nilai Panjang turun udara, L = 6.2 cm	1 1
(a)(ii)	- Menyatakan hubungan L dan $\theta$ : L bertambah secara linear dengan $\theta$ . - Menyatakan alasan: Graf garis lurus dengan kecerunan positif dan melalui pintasan paksi-L bukan sifar/ Graf garis lurus dengan kecerunan positif dan melalui titik bukan asalan	1 1
(a)(iii)	- Melukis satu segitiga di bawah graf yang merangkumi sebahagian besar graf  - Membuat gantian nilai dengan betul ke dalam formula kecerunan Kecerunan = $\frac{7.5-6.2}{65-0}$ - Menulis jawapan akhir dengan nilai dan unit yang betul Kecerunan = 0.02 cm°C <sup>-1</sup>	1 1 1 1
(b)(i)	Menggantikan nilai kecerunan dan nilai pintasan-L ke dalam persamaan am graf garis lurus : y = mx + c Menulis persamaan linear: L = 0.02 $\theta$ + 6.2	1 1

(b)(ii)	Menggantikan nilai $\theta = 90^\circ\text{C}$ ke dalam persamaan linear $L = 0.02(90) + 6.2$ Menulis jawapan akhir dengan nilai yang betul $L = 8.0 \text{ cm}$	 1 1
(c)	Mengelak ralat paralaks dengan memastikan mata berserenjang dengan skala bacaan pembaris dan termometer.	1

- INFERENS** : Tekanan dipengaruhi oleh ketumpatan
- HIPOTESIS** : Jika ketumpatan bertambah, maka tekanan bertambah
- TUJUAN** : Untuk mengkaji hubungan antara ketumpatan dan tekanan
- PEMBOLEHUBAH** : Manipulasi : Ketumpatan,  $\rho$   
 Bergerakbalas : Tekanan,  $P$  // Beza ketinggian paras air di dalam manometer,  $y$   
 Dimalarkan : Kedalaman,  $h$
- RADAS DAN BAHAN** : Corong tisel, manometer, silinder penyukat, air, garam, penimbang elektronik, tiub getah, pembaris meter, tiub getah nipis, kaki retort



- PROSEDUR** :
1. Silinder penyukat dipenuhkan dengan isi padu air,  $V = 250$  ml dan dicampurka dengan garam berjisis,  $m = 10$  g. Rendamkan corong tisel secara menegak pada kedalaman air,  $h = 30.0$  cm
  2. Ukur beza ketinggian paras air di dalam manometer,  $y$  dengan menggunakan pembaris meter  
(Beza ketinggian paras air di dalam manometer,  $y =$  Tekanan air)
  4. Ulang eksperimen dengan melarutkan garam berjisis,  $m = 20$  g,  $30$  g,  $40$  g dan  $5$  ke dalam air berisi padu,  $V = 250$  ml.

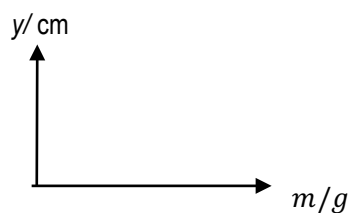
**PENJADUALAN DATA :**

Jisim garam, $m / g$	Beza ketinggian paras air di dalam manometer, $y / cm$
10	
20	
30	
40	
50	

@

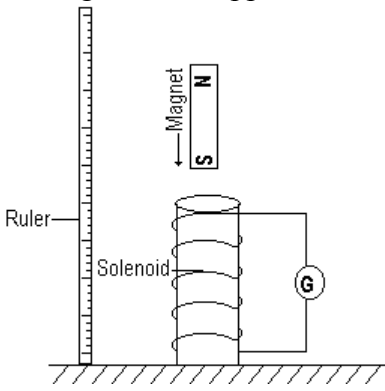
Ketumpatan, $\rho$ $/ gcm^{-3}$	Tekanan, $P / Pa$
$\rho_1$	
$\rho_2$	
$\rho_3$	
$\rho_4$	
$\rho_5$	

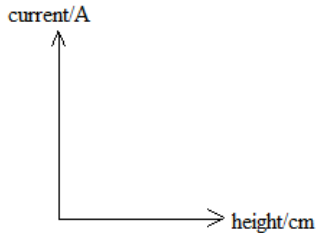
**ANALISA DATA** :



@



No.	Mark	Answer
4 (a)	1	Inference : The brightness of the bulb depend on the speed of wheel rotation// The brightness of the bulb depend on the speed of magnet
(b)	1	Hypothesis: If the speed increases (magnet), the (induced) current increase.// If the height of magnet increases, the (induced) current increases.
(c)(i)		Aim: To investigate the relationship between height (of magnet released) and the (induced) current
(ii)	1 <i>(kedua-dua betul)</i>	Variables: Manipulated : height of magnet released Responding : induced current
	1	Constant Variable : number of turn/strength of magnet/
(iii)	1	List of apparatus : miliammeter/galvanometer, meter ruler, connection wire, bar magnet, and coils/solenoid, retort stand
(iv)	1	Arrangement of apparatus: 
(v)	1	Control of manipulated variable: Set up the apparatus as shown in the diagram Measure the height of magnet, $X_1$ cm
	1	Measurement of responding variable: Released the bar magnet into solenoid. Record the reading of miliammeter/Galvanometer while the bar magnet is moving into the solenoid./Record the maximum reading of miliammeter/Galvanometer
	1	Repeat the experiment 4 times with the difference height of magnet bar released $X_2$ cm, $X_3$ cm, $X_4$ cm and $X_5$ cm.

(vi)		<p>Tabulation of data : (<i>Terima jika tak tulis unit</i>)</p> <table border="1" data-bbox="506 241 1369 472"> <thead> <tr> <th data-bbox="506 241 938 283">Height of magnet released/ cm</th> <th data-bbox="938 241 1369 283">Induced current/ mA</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	Height of magnet released/ cm	Induced current/ mA										
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(vii)	1	<p>Analysis of data. Plot the graph of current against height</p> 												
	12													