



PEPERIKSAAN PERCUBAAN SPM
TAHUN 2018
MAJLIS PENGETUA SEKOLAH MALAYSIA (KEDAH)

MODUL 1

FIZIK

Kertas 3

Peraturan Pemarkahan

BAHAGIAN A

No	Mark Scheme	Sub Mark	Total Mark																		
1(a)	(i) State the manipulated variable Electric current // I	1	3																		
	(ii) State the responding variable Angle of deflection // θ	1																			
	(iii) State one constant variable Diameter of copper wire // strength of magnadur magnet	1																			
(b)	(i) Record four values of angle θ_d $\theta_d = 98^\circ; 105^\circ; 114^\circ; 123^\circ; 130^\circ$	2	4																		
	(ii) Record five values of angle of deflection θ $\theta = 8^\circ; 15^\circ; 24^\circ; 33^\circ; 40^\circ$ All correct: 2 marks; Any 3 to 4 values correct: 1 mark	2																			
(c)	<p>Tabulate the results</p> <p>Table with 3 columns I, θ_d and θ</p> <p>Correct units for I, θ_d and θ</p> <p>The values of I, θ_d and θ are consistent</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>I / A</th> <th>$\theta_d / ^\circ$</th> <th>$\theta / ^\circ$</th> </tr> </thead> <tbody> <tr> <td>0.1</td> <td>98</td> <td>8</td> </tr> <tr> <td>0.2</td> <td>105</td> <td>15</td> </tr> <tr> <td>0.3</td> <td>114</td> <td>24</td> </tr> <tr> <td>0.4</td> <td>123</td> <td>33</td> </tr> <tr> <td>0.5</td> <td>130</td> <td>40</td> </tr> </tbody> </table>	I / A	$\theta_d / ^\circ$	$\theta / ^\circ$	0.1	98	8	0.2	105	15	0.3	114	24	0.4	123	33	0.5	130	40	1 1 1	3
I / A	$\theta_d / ^\circ$	$\theta / ^\circ$																			
0.1	98	8																			
0.2	105	15																			
0.3	114	24																			
0.4	123	33																			
0.5	130	40																			
(d)	<p>Draw a complete graph of θ against I</p> <p>θ at the y-axis, I at the x-axis ✓</p> <p>Correct unit for θ and I ✓</p> <p>Suitable scale for both axes ✓</p> <p>5 points plotted correctly ✓✓ [3/4 points correct: ✓]</p> <p>Best straight line ✓</p> <p>Size of graph ✓</p> <p>7✓ : 5 marks 5-6✓ : 4 marks 3-4✓ : 3 marks 2✓ : 2 marks 1✓ : 1 mark</p>	5	5																		
(e)	<p>State the correct relationship between θ and I</p> <p>θ is directly proportional to I</p>	1	1																		
			16																		

No	Mark Scheme	Sub Mark	Total Mark
2(a)	(i) State the relationship between v and t - v is decreases linearly with t	1	
	(ii) State the value of v when t = 0 s Show graphical intrapolation correctly - $v = 24.0 \text{ m s}^{-1}$	1 1	
	(iii) Calculate the gradient of the graph, m - Draw a sufficiently large triangle at least 3×3 (2 cm \times 2 cm) square - Correct substitution (follow the candidate's triangle) $m = -\frac{24.0}{2.5}$ - State the correct value / answer with correct unit - 9.6 m s^{-1}	1 1 1	
	(iv) State the answer - deceleration	1	
	(v) Calculate area under the graph, s $s = \frac{1}{2} \times 24 \times 2.5$ Correct answer and unit $= 30.0 \text{ m}$	1 1	
(b)	Show the correct substitution $30 = 0 + \frac{1}{2} (9.6) t^2$ Correct answer and unit $t = 2.5 \text{ s}$	1 1	2
(c)	State one correct precaution - Repeat the experimnet and find the average - Eyes must be perpendicular to the reading of stopwatch	1	1
			12

BAHAGIAN B

No	Mark Scheme	Sub Mark	Total Mark												
3(a)	State a suitable inference The temperature affects pressure	1	1												
(b)	State a relevant hypothesis When the temperature of air increases, the pressure increases	1	1												
(c)	Describe a complete and suitable experimental framework														
(i)	State the aim of the experiment To investigate the relationship between temperature and the pressure of air	1													
(ii)	State the variables Manipulated variable: Temperature of air , θ Responding variable: Pressure of air, P Constant variable: Volume and mass of the trapped air	1 1 1													
(iii)	List out the important apparatus and materials Round-bottomed flask, mercury thermometer, Bourdon gauge, Bunsen burner, tripod, wire gauze, retort stand, stirrer, ice , beaker, water	1													
(iv)	State a functional arrangement of the apparatus Labelled diagram showing set up of apparatus that will function	1													
(v)	State the method to control the manipulated variable 1. The round-bottomed flask is submerged in water and the water bath with ice is stirred continuously until the temperature of the water bath is stable at 30 °C. State the method to measure the responding variable 2. Read and record the pressure, P, reading from the Boudon Gauge. Repeat the experiment with different temperature of water 4. Repeat the experiment for temperature of water, $\theta = 40\text{ }^{\circ}\text{C}$, 50 °C, 60 °C and 70 °C.	1 1 1													
(vi)	State how the data is tabulated <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>$\theta / ^{\circ}\text{C}$</th> <th>P / Pa</th> </tr> </thead> <tbody> <tr> <td>30</td> <td></td> </tr> <tr> <td>40</td> <td></td> </tr> <tr> <td>50</td> <td></td> </tr> <tr> <td>60</td> <td></td> </tr> <tr> <td>70</td> <td></td> </tr> </tbody> </table>	$\theta / ^{\circ}\text{C}$	P / Pa	30		40		50		60		70		1	11
$\theta / ^{\circ}\text{C}$	P / Pa														
30															
40															
50															
60															
70															
(vii)	Show how the data is analysed Plot a graph of P against θ .	1													
			Max 12												

No	Mark Scheme	Sub Mark	Total Mark												
4(a)	State a suitable inference The length of a wire affects the resistance of the wire	1	1												
(b)	State a relevant hypothesis The longer the length of a wire, the higher the resistance in the wire	1	1												
(c)	Describe a complete and suitable experimental framework														
(i)	State the aim of the experiment To investigate the relationship between the length of a wire and the resistance the wire	1													
(ii)	State the variables Manipulated variable: length of wire, L Responding variable : Resistance, R Constant variable : Diameter of wire// Thickness of wire // Cross sectional area // Temperature	1 1 1													
(iii)	List out the important apparatus and materials Constantan wire, metre rule, ammeter, voltmeter, rheostat, battery, connecting wires	1													
(iv)	State a functional arrangement of the apparatus Labelled diagram showing set up of apparatus that will function	1													
(v)	State the method to control the manipulated variable 1. The circuit is set up with length, L = 20.0 cm of constantan wire State the method to measure the responding variable 2. The switch is on. The current, I, is fixed 0.5 A by adjusted a rheostat. 3. The voltmeter reading is recorded and the resistance is calculated by formula $R = \frac{V}{I}$. Repeat the experiment with different length of wire 4. The procedure is repeated with values of, L = 30.0 cm, 40.0 cm, 50.0 cm and 60.0 cm	1 1 1													
(vi)	State how the data is tabulated <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>L/cm</th> <th>R/Ω</th> </tr> </thead> <tbody> <tr> <td>20.0</td> <td></td> </tr> <tr> <td>30.0</td> <td></td> </tr> <tr> <td>40.0</td> <td></td> </tr> <tr> <td>50.0</td> <td></td> </tr> <tr> <td>60.0</td> <td></td> </tr> </tbody> </table>	L/cm	R/ Ω	20.0		30.0		40.0		50.0		60.0		1	
L/cm	R/ Ω														
20.0															
30.0															
40.0															
50.0															
60.0															
(vii)	Show how the data is analysed Plot a graph of R against L.	1	11												
			Max 12												

PERATURAN PEMARKAHAN TAMAT

