CADANGAN JAWAPAN KERTAS 3 (MPP3 2019)

<table>
<tr><th>Section</th><th>Mark</th><th>Answer</th></tr>
<tr><td>1 (a)(i)</td><td>1</td><td>State the manipulated variable correctly
electric current</td></tr>
<tr><td>(ii)</td><td>1</td><td>State the responding variable correctly
magnitude of the force // displacement of movement</td></tr>
<tr><td>(iii)</td><td>1</td><td>State the constant variable correctly
The strength of magnetic field / the mass of light copper rod</td></tr>
<tr><td>(b)
(i)

(ii)</td><td>

3

2
2</td><td>Record the position of looking pin correctly
All 5 values of x are correct 3 marks (at each diagram without unit)
3 values of x are correct 2 marks

Quantities of I and x, and its unit shown in the table
All value of I and x consistence in one decimal place
Or no decimal place if x is recorded in mm

<table>
<tr><th>I / A</th><th>x /cm // mm</th></tr>
<tr><td>0.5</td><td>0.6 // 6</td></tr>
<tr><td>1.0</td><td>1.2 // 12</td></tr>
<tr><td>1.5</td><td>1.8 // 18</td></tr>
<tr><td>2.0</td><td>2.3 // 23</td></tr>
<tr><td>2.5</td><td>3.0 // 30</td></tr>
</table>

Full marks : 7</td></tr>
<tr><td>(c)</td><td></td><td>5 Draw a complete graph of x againts I
Tick ✓ based on the following aspects;.

x on the –y axis and I on the –x axis give ✓

State the units of the variables each axis give ✓

Both axes are marked with uniform scale
And not odd scale (1,2, 4,5,10) give ✓

All five points are plotted correctly
give ✓✓
(Only three points plotted correctly, give ✓)

Best fitted straight line is drawn give ✓

Show the minimum size of graph (8 x 6) cm give ✓

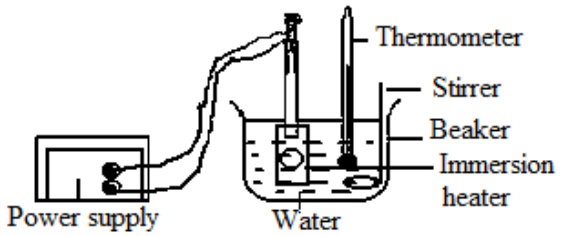
score :
Number of ✓ Score
7 ✓ 5</td></tr>
</table>

		5-6 ✓ 4 3-4 ✓ 3 2 ✓ 2 1 ✓ 1 Toatal maks : **5 marks**
(d)		**1 State the correct relationship between h and H** Directly propotional
16 marks		

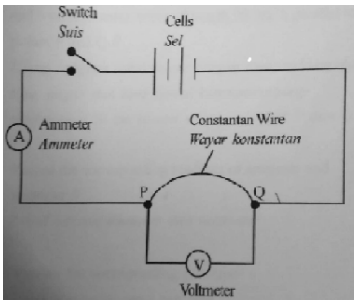
NO.		MARKING CRITERIA	MARK	
			SUB	TOTAL
2(a)	(i)	W is directly proportional to V	1	1
	(ii)	- show the method to determine the value of W by showing the corresponding horizontal line with V = 35 cm^3. - State the value within acceptable range 0.34 – 0.36 N	1 1	2
(b)		- draw a sufficiently large tringle minimum (8 x 8) cm - correct substitution (follow candidate's triangle - sample answer: $\frac{(0.5-0)}{(50-0)}$ - state the correct value / answer with correct unit. - 0.01 N cm^{-3}	1 1 1	3
(c)		-correct substitution -sample answer: ρ = 100 k = 100 (0.01) = 1.0 g cm^{-3}	1 1	2
(d)		- show graphical extrapolation correctly (until V = 70 cm^3) -show the method to determine the value of W by showing the corresponding horizontal line with V = 70 cm^3. - state the value within acceptable range 0.69 – 0.71 N.	1 1 1	3

(e)	-Position of eye must be aligned/perpendicular with the scale on the spring balance to avoid parallax error. (anyone relevant response)	1	1
	TOTAL		**12 max**

No.	Mark	Answer
3(a)	1	**State a suitable inference** The mass affects the rise / change of temperature
(b)	1	**State a relevant hypothesis (with direction)** The rise / change of temperature decreases as the mass increases
(c)		**Describe a complete and suitable experimental framework**
(i)	1	**State the aim of the experiment** To investigate the relationship between mass and rise / change of temperature
(ii)	1 1	**State the manipulated variable and the responding variable** Manipulated variable: Mass, m Responding variable: Rise in temperature / Change of temperature, θ
	1	**State the constant variable** Constant variable: Specific heat capacity // Power / Heat supplied
(iii)	1	**List out the important apparatus and materials** Power supply, Immersion heater, Stirrer, Beaker, Thermometer, Asbestos sheet, Stopwatch, Inertial balance

<table>
<tr><td>(iv)</td><td>1</td><td><u>State a function arrangement of the apparatus</u>
 
</td></tr>
<tr><td>(v)</td><td>1</td><td><u>State the method of controlling the manipulated variable</u>
1. 100 g of water is filled in the beaker.</td></tr>
<tr><td></td><td>1</td><td><u>State the method of measuring the responding variable</u>
2. Switch on the power supply to heat up the water for 2 minutes.
3. Read and record the reading of thermometer.</td></tr>
<tr><td></td><td>1</td><td><u>Repeat the experiment at least 4 times with different values</u>
4. Repeat the experiment for mass of water, m = 150 g, 200 g, 250 g and 300 g.</td></tr>
<tr><td>(vi)</td><td>1</td><td>Tabulation the data
<table><tr><td>m/g</td><td>100</td><td>150</td><td>200</td><td>250</td><td>300</td></tr><tr><td>θ / ^{0}C</td><td></td><td></td><td></td><td></td><td></td></tr></table></td></tr>
<tr><td>(vii)</td><td>1</td><td><u>State how data will be analysed (sketch graph/statement)</u>
Plot graph θ against m</td></tr>
<tr><td>Total</td><td>12 Max.</td><td></td></tr>
</table>

No.	Mark	Answer
4(a)	1	**<u>State a suitable inference</u>** Brightness of the bulb influenced of length of wire. Resistance of conductor influenced of length.
(b)	1	**<u>State a relevant hypothesis (with direction)</u>** If length of conductor increases the resistance increases.

(c)		**Describe a complete and suitable experimental framework**
(i)	1	**State the aim of the experiment** To investigate the relationship between length and resistance
(ii)	1 1	**State the manipulated variable and the responding variable** Manipulated variable: length Responding variable: resistance
	1	**State the constant variable** Constant variable: diameter of wire/resistivity
(iii)	1	**List out the important apparatus and materials** Dry cell, ammeter, voltmeter, constantan wire and meter ruler.
(iv)	1	**State a function arrangement of the apparatus** 
(v)	1	**State the method of controlling the manipulated variable** 1 Experiment started by using a constantan wire length of 10.0 cm.
	1	**State the method of measuring the responding variable** 2 Switched on the switch and record the reading of ammeter, I, and voltmeter, V 3 Calculated the resistance, R = V / I
	1	**Repeat the experiment at least 4 times with different values** 4 The experiment is repeated by using the with different length of constantan wire such as 20.0 cm, 30.0 cm, 40.0 cm and 50.0 cm.

<table>
<tr><td>(vi)</td><td>1</td><td>Tabulation the data

<table><tr><td>Length, l / cm</td><td>10.0</td><td>20.0</td><td>30.0</td><td>40.0</td><td>50.0</td></tr><tr><td>Resistance, R / Ω</td><td></td><td></td><td></td><td></td><td></td></tr></table></td></tr>
<tr><td>(vii)</td><td>1</td><td><u>State how data will be analysed (sketch graph/statement)</u>
Plot graph R against l</td></tr>
<tr><td>Total</td><td>12
Max.</td><td></td></tr>
</table>