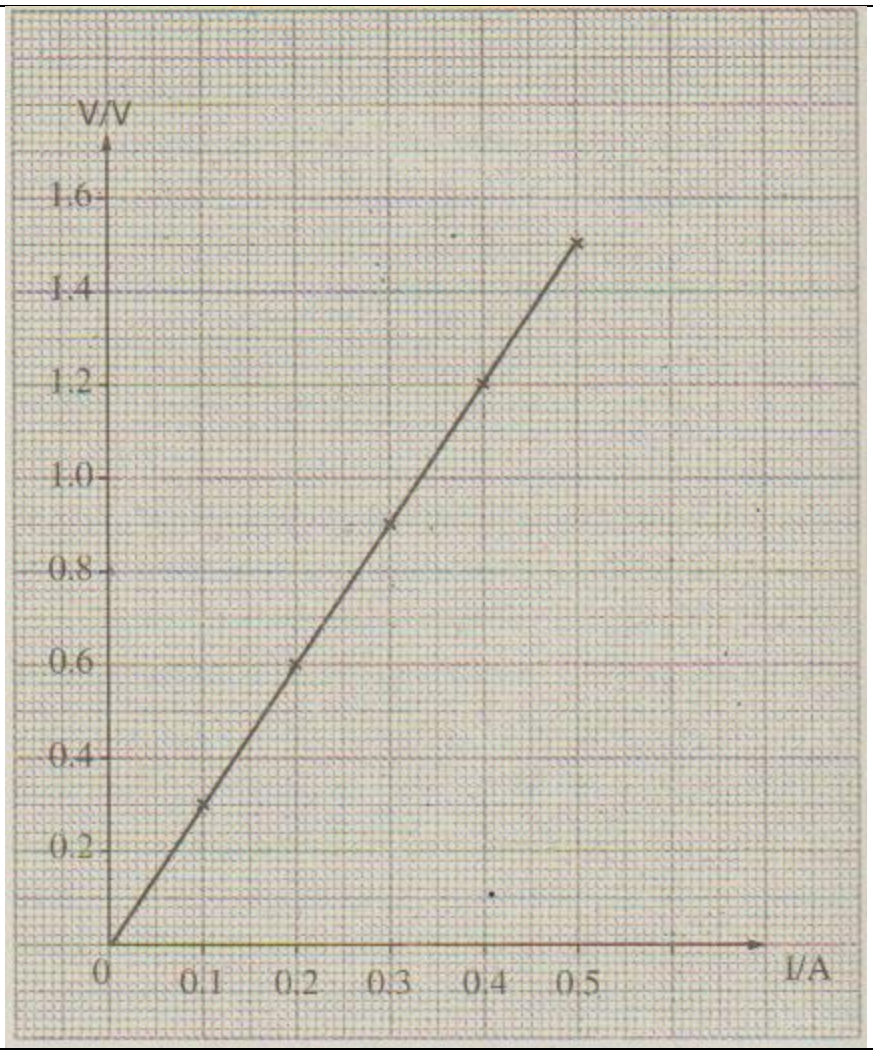
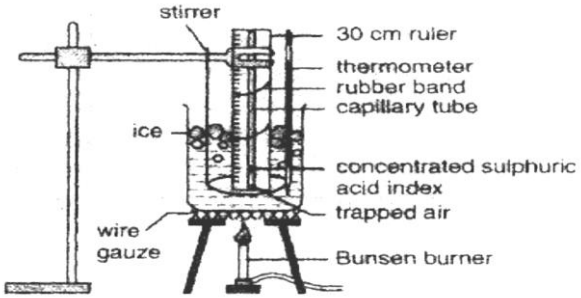
SKEMA KERTAS 3 PERCUBAAN SPM 2018

<table>
<tr><td>No. 1</td><td>Answer
Jawapan</td><td>Mark
Markah</td></tr>
<tr><td>1 (a) (i)</td><td>The magnitude of electric current
Magnitud arus elektrik</td><td>1</td></tr>
<tr><td>1 (a) (ii)</td><td>The value of voltage
Nilai voltan</td><td>1</td></tr>
<tr><td>1 (a) (iii)</td><td>Length of constantan wire/cross sectional area of wire/diameter of wire/ thickness of wire
Panjang wayar konstantan/luas keratan rentas dawai/ diameter dawai/ ketebalan dawai</td><td>1</td></tr>
<tr><td>1 (b) (i)</td><td>+ 0.1 V</td><td>1</td></tr>
<tr><td>1 (b) (ii)</td><td>
<table>
<tr><th>Diagram
Rajah</th><th>V_i (V)</th></tr>
<tr><td>1.3</td><td>0.4</td></tr>
<tr><td>1.4</td><td>0.7</td></tr>
<tr><td>1.5</td><td>1.0</td></tr>
<tr><td>1.6</td><td>1.3</td></tr>
<tr><td>1.7</td><td>1.6</td></tr>
</table>
</td><td>2</td></tr>
<tr><td>1 (b) (iii)</td><td>
<table>
<tr><th>Diagram
Rajah</th><th>V (V)</th></tr>
<tr><td>1.3</td><td>0.3</td></tr>
<tr><td>1.4</td><td>0.6</td></tr>
<tr><td>1.5</td><td>0.9</td></tr>
<tr><td>1.6</td><td>1.2</td></tr>
<tr><td>1.7</td><td>1.5</td></tr>
</table>
</td><td>2</td></tr>
<tr><td>1 (c)</td><td>
<table>
<tr><th>I / A</th><th>V_i / V</th><th>V / V</th></tr>
<tr><td>0.1</td><td>0.4</td><td>0.3</td></tr>
<tr><td>0.2</td><td>0.7</td><td>0.6</td></tr>
<tr><td>0.3</td><td>1.0</td><td>0.9</td></tr>
<tr><td>0.4</td><td>1.3</td><td>1.2</td></tr>
<tr><td>0.5</td><td>1.6</td><td>1.5</td></tr>
</table>
</td><td>2</td></tr>
</table>

1 (d)		5
1 (e)	V is directly proportional to I. *V berkadar langsung dengan I.*	1

NO. 2	MARKING CRITERIA		MARK	
			SUB	TOTAL
(a)	(i)	Directly proportional	1	1
	(ii)	Show graph extrapolation (x axis or y axis)	1	
		When sin r = 0.6, sin i = 0.9,	1	
		i = 64.16°	1	3
	(iii)	Draw a sufficient large triangle to calculate the gradient of the graph (at least 6 cm x 8 cm).	1	
		Correct substitution (follow candidate's triangle). m = $\frac{0.6-0}{0.9-0}$	1	
		State value of the gradient. m = 0.67	1	3
(b)	Correct substitution: $n = \frac{1}{0.67}$		1	
	n = 1.49		1	2
(c)	$1.49 = \frac{3\times10^8}{v}$		1	
	v = 2.01 x 10^8		1	2
(d)	The eye must be perpendicular to the reading of the protactor to avoid parallax error *Mata hendaklah berserenjang dengan bacaan jangka sudut untuk mengelakkan ralat paralaks*		1	1
				12

NO. 3		
(a)	**Inference** The volume depend on the temperature *Isipadu bergantung kepada suhu*	1
(b)	**Hypothesis** The higher the temperature the higher the volume *Semakin bertambah suhu semakin bertambah isipadu*	1
(c)(i)	**Aim** To investigate the relationship between temperature and volume *Untuk menyiasat hubungan antara suhu dan isipadu*	1
(ii)	**Variables** Manipulated : Temperature of trapped air, θ *Manipulasi : Suhu udara terperangkap, θ* Responding : Volume, cm^3/Length of air column *Bergerakbalas : Isipadu, cm^3 /Panjang turus udara, x* Constant : Pressure of trapped air *Dimalarkan : Tekanan udara yang terperangkap*	1 1 1
(iii)	**List of apparatus and materials** **Capilarry tube**,beaker,**thermometer**,bunsen burner,tripod stand,wire gouze,restord stand,**mercury or concentric acid sulfuric acid**,strirre, **ruler** and ice ***Tiub kapilari**, bikar, **termometer**, penunu bunsen, tungku kaki tiga, kasa dawai, kaki retort, **merkuri atau asid sulfurik pekat**, pengacau, **pembaris** dan ais*	1
(iv)	**Arrangement of the apparatus**  	1

<table>
<tr><td>(v)</td><td>Procedure of the experiment which include the method of controlling the manipulated variable and the method of measuring the responding variable.

1. The water is heated and continuously stirred until the water temperature fall to 20°C.
2. The length of the air column, x is measured using meter rule and recorded
3. Repeated the experiment using temperature of 30,40,50 and 60°C.

1. Air dipanaskan dan dikacau berterusan sehingga suhu jatuh hingga 20°C.
2. Panjang turus udara, x diukur dengan menggunakan pembaris dan dicatatkan.
3. Ulang eksperimen menggunakan suhu 30,40,50 and 60°C.</td><td>1

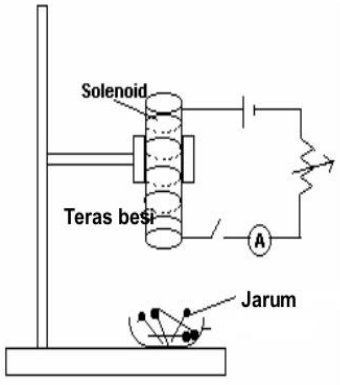
1
1</td></tr>
<tr><td>(vi)</td><td>Tabulate the data
<table><tr><td>Temperature of trapped air, θ (°C)
Suhu udara terperangkap,θ (°C)</td><td>Length of air column, x(cm)
Panjang turus udara, x(cm)</td></tr><tr><td>20</td><td></td></tr><tr><td>30</td><td></td></tr><tr><td>40</td><td></td></tr><tr><td>50</td><td></td></tr><tr><td>60</td><td></td></tr></table></td><td>1</td></tr>
<tr><td>(vii)</td><td>Analyse the data
  </td><td>1</td></tr>
<tr><td></td><td>TOTAL
MAXIMUM</td><td>13
12</td></tr>
</table>

<table>
<tr><th>NO. 4</th><th>CADANGAN JAWAPAN</th><th>MARKAH</th></tr>
<tr><td>(a)</td><td>The loudness of the speaker depends on the magnitude of current</td><td>1</td></tr>
<tr><td>(b)</td><td>When the current increases, the strength of magnetic field increase</td><td>1</td></tr>
<tr><td>(c)(i)</td><td>To investigate the relationship between the current and the number of pin attach.</td><td>1</td></tr>
<tr><td>(c)(ii)</td><td>Manipulated variable: current, I

Responding variable: number of pin attach

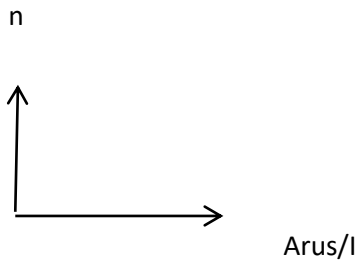
Constant variable: number of coil</td><td>1

1

1</td></tr>
<tr><td>(c)(iii)</td><td>Power supply, insulated wire, rheostat, soft iron core, retort stand, paper clip, ammeter.</td><td>1 – functioning</td></tr>
<tr><td>(c)(iv)</td><td> 
</td><td>1</td></tr>
<tr><td>(c)(v)</td><td>1. The power supply is switched on
2. The rheostat is adjusted until the current, I = 0.2 A
3. The number of paper clip attach to the iron core is calaculated and record
4. The experiment is repeated for current, I = 0.4 A, 0.6 A, 0.8 A and 1.0 A</td><td>1

1

1</td></tr>
<tr><td>(c)(vi)</td><td><table><tr><th>I/A</th><th>Number of paper clip</th></tr><tr><td>0.2</td><td></td></tr><tr><td>0.4</td><td></td></tr><tr><td>0.6</td><td></td></tr><tr><td>0.8</td><td></td></tr><tr><td>1.0</td><td></td></tr></table></td><td>1</td></tr>
</table>

(c)(vii)		1
JUMLAH MARKAH		13
MARKAH MAKSIMUM		12