

**SKEMA JAWAPAN**

**SOALAN PEPERIKSAAN PERCUBAAN  
SPM 2012**

**MATA PELAJARAN : FIZIK**

**PHYSICS**

**Paper 1**

1	A
2	D
3	A
4	C
5	C
6	C
7	C
8	A
9	C
10	D
11	B
12	C
13	B
14	B
15	C
16	B
17	A
18	A
19	D
20	A
21	D
22	A
23	A
24	A
25	D

26	B
27	D
28	D
29	C
30	A
31	B
32	D
33	C
34	A
35	C
36	A
37	D
38	D
39	D
40	A
41	B
42	A
43	D
44	C
45	A
46	A
47	A
48	D
49	A
50	B

**MARKING SCHEME PHYSICS PAPER 2**  
**SKEMA PEMARKAHAN FIZIK KERTAS 2**  
**TRIAL YEAR 2012**  
**PERCUBAAN 2012.**

**SECTION A**  
**BAHAGIAN A**

<b>QUESTION 1</b>	<b>Mark</b>	<b>Answer</b>	<b>Note</b>
(a)	1	<i>State the correct name of the physical quantity</i> ketebalan	
(b)	1	<i>State the correct accuracy</i> Diagram 1(a) = 0.01cm and Diagram 1(b) = 0.01 mm	<i>Correct accuracy</i> any one/salah satu
(c)	1	<i>State the correct instrument</i> 1(b)	
(d)	1	<i>State the correct reading</i> $4.5 + 0.12 = 4.62\text{mm}$	Without unit /tanpa unit 0 mark/ 0 markah

**TOTAL MARKS = 4**

<b>QUESTION 2</b>	<b>Mark</b>	<b>Answer</b>	<b>Note</b>
(a)	1	Number of complete oscillation/ cycle in a second Bilangan ayunan/kitaran lengkap dalam masa satu saat	
(b)	1	2 cm (with unit)	
(c)	1	$T = \frac{1}{f}$ ; $T = \frac{\square}{\square}$ $= 0.1\text{ s}$ 1 All of the boxes mark with correct value of T 0.5 , 0.1, 1.5 and 2.0	
(d)	1	Decreases	

**TOTAL MARKS = 5**

<b>QUESTION 3</b>	<b>Mark</b>	<b>Answer</b>	<b>Note</b>
(a)	1	<i>State the correct meaning of potential difference</i> The work done in moving a unit charge from one point to the other. <i>Kerja yang dilakukan untuk memindahkan satu unit cas antara dua titik.</i>	
(b)	1	<i>Give the correct function</i> To measure potential difference ./ voltage <i>Mengukur beza keupayaan./voltan</i>	
(c) (i)	1	<i>Give the correct diagram</i>	

	1	Diagram 3(b)/ Rajah 3(b) <b>Give the correct reason</b> Energy wastage inside the cell. <i>Tenaga digunakan untuk mengatasi rintangan dalam sel/ elekrolit.</i>	
(d) (i)	1	<b>Give the correct value of E</b> $E = 6 \text{ v}$	
(ii)	1	<b>Give the correct answer</b> From gradient of the graph/ <i>Daripada kecerunan graf.</i>	

**TOTAL MARKS = 6**

QUESTION 4	Mark	Answer	Note
(a)	1	Weight is the gravitational force that pulls a body to the centre of the earth	
(b)	1 1	↑ Buoyant force ↓ Weight	
(c)	1	Size of the balloon	
(d)	1 1	The bigger the size of the balloon the bigger the volume of air displaced The bigger the volume of air displaced the higher the buoyant force	
(e)	1	Archimedes Principle	

**TOTAL MARKS = 7**

QUESTION 5	Mark	Answer	Note
(a) (i) (ii)	1 1	<b>5.1 (i) menolak 5.1 (ii) menarik</b> Kerja 5.1 < kerja 5.2	
(b) (i)  (ii)	1 1 1	<b>Give the correct method</b> Method 5.1 (i) / kaedah 5.1(i) <b>State the explanation of the reason correctly</b> The forces given parallel with the surface of motion. So, all the forces given used to move the car. <i>Daya yang dikenakan selari dengan permukaan gerakan, dengan itu semua daya digunakan untuk menggerakkan kereta.</i>	
(c)(i)  (ii)  (iii)	1 1	<b>Give the correct answer</b> Gravitational potential energy and kinetic energy  <b>Mark correctly in diagram 5.2</b> At the ground ( below) —> kinetic energy At the top(staircase) —> gravitational potential energy  <b>State the correct answer</b>	  <b>Mark two correctly- 1 mark</b> <b>Mark one correctly- 0 mark</b>

	1	The conservation of energy principle. <i>Prinsip keabadian tenaga</i>	
--	---	--	--

**TOTAL MARKS = 8**

QUESTION 6	Mark	Answer	Note
(a)(i)	1	The height of piston in diagram 6.2 is higher than 6.1 // $h_2 > h_1$	
(ii)	1	Temperature of the gas in diagram 6.2 is higher than 6.1	
(b)	1	The higher the temperature of the gas the higher the height of piston	
	1	When the temperature increases the kinetic energy of the gas molecules increases	
	1	The gas will move faster and collide with the container and will push the piston up	
(c)	1	Charles' Law	
(d)	1	The height of the piston increases	
	1	When the force or pressure decrease, the volume of the gas increase (at constant temperature)	

**TOTAL MARKS = 8**

QUESTION 7	Mark	Answer	Note
(a)(i)	1	<i>State type of transistor correctly</i> n-p-n transistor	
(b)(i)	1	<i>State the correct answer</i> 12 V	<b>Without unit / tanpa unit</b> 0 mark / 0 markah
(ii)	1	$27 + 3 = 30 \text{ k}\Omega$	
(iii)	1	$V_{YZ} = \frac{3}{3+27} \times 12$ $= 1.2 \text{ V}$	
(c)	1	1- Lamp L will not glow / light up <i>Lampu tidak menyala</i>	
	1	2- because the voltage across YZ (i.e 1.2 V) is less than the base-emitter potential difference of 2V <i>Kerana voltan merentasi YZ (i.e 1.2 V) adalah kurang daripada beza upaya tapak-pengumpul 2V</i>	
(d)	1	<i>State the answer correctly</i> Resistor $R_1$ and $R_2$ are swapped places. <i>Menukarkan kedudukan resistor <math>R_1</math> dengan <math>R_2</math> dan sebaliknya.</i>	

(e)	1 1	<b>State the answer correctly</b> 1-Resistor R <sub>1</sub> is replaced by a thermistor. <i>Resistor R<sub>1</sub> diganti dengan thermistor.</i> 2- Lamp L is replaced by an electric bell. <i>Lampu L diganti dengan loceng.</i>	Vice versa
<b>TOTAL MARKS = 10</b>			

QUESTION 8	Mark	Answer	Note
(a)	1	Isotope of an element which is not stable <i>Isotop unsur yang tidak stabil</i>	
(b)(i) (ii) (iii)	1 1 1 1	Short half life More safe Beta Can penetrate through the skin Liquid Easy to absorb by the blood	
(c)	1	increase	
(d)	1	Sodium-24	
(e)	1 1	$  \begin{array}{ccccccc}  32 & & & 32 & & 0 \\  & \longrightarrow & & \nearrow + & & e \\  15 & & & 16 & & -1  \end{array}  $	
(f)	1 1	$  1 - \frac{1}{2} - \frac{1}{4} - \frac{1}{8} - \frac{1}{16}  $ $  4T_{1/2} \times 5 = 20 \text{ days}  $	
<b>TOTAL MARKS = 12</b>			

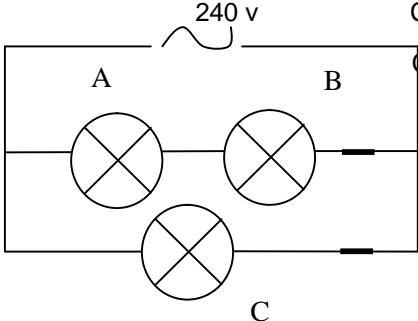
**SCHEME PAPER 2**  
**SKEMA KERTAS 2**  
**SECTION B**  
**BAHAGIAN B**

<b>QUESTION 9</b>	<b>Mark</b>	<b>Answer</b>	<b>Note</b>
(a)(i)	1	The rate of change of distance / the change of distance over time / <i>kadar perubahan jarak/perubahan jarak dengan masa /</i> $\frac{S}{t}$ , where $S = \text{distance}$ , $t = \text{time}$	<b>Only symbol no marks.</b> Simbol sahaja tidak ada markah, 0 markah.
(a)(ii)	1	The speed of water flows less than the speed of blowing air. <i>Laju air mengalir lebih rendah daripada laju angin yang ditiup</i>	
	1	The pressure at point A greater than, the pressure at the top of a sheet of paper. <i>Tekanan di titik A lebih tinggi daripada tekanan dibahagian atas kertas.</i>	
	1	The position of the levers of the water in venturi tube is higher. Whereas the position of a sheet of paper lift up when air is blown. <i>Kedudukan aras air dalam tiub venturi adalah tinggi.</i> <i>Manakala kedudukan kertas terangkat ke atas apabila ditiup.</i> If the speed of water is lower the position of water in venturi tubes is higher. When the speed of blowing air is higher, the position of a sheet of paper lift up. If the speed is higher, the pressure is lower and vice versa. <i>Jika laju air rendah, kedudukan air dalam tiub venturi tinggi.</i> <i>Apabila laju angin yang ditiup tinggi, kedudukan kertas terangkat ke atas.</i>	
	1	The relationship between velocity and pressure is in accordance to Bernoulli's Principle. If the speed higher, the pressure is lower. <i>Hubungan antara halaju dan tekanan berdasarkan prinsip Bernoulli. Jika halaju tinggi, tekanan menjadi rendah.</i>	
(b)	1	When two speed boats move faster and closely to each other, an accident may be occurred. <i>Apabila dua bot laju bergerak pantas dan menghampiri antara satu sama lain kemungkinan kemalangan akan berlaku.</i>	
	1	It is because the water moved at a very high velocity between the boats. <i>Ini disebabkan oleh laju air yang tinggi diantara bot laju.</i>	
	1	According to Bernoulli's Principle, the pressure of the moving air decreases as the speed of the air increases. <i>Berdasarkan prinsip Bernoulli, tekanan udara berkurang dengan bertambahnya laju udara.</i>	
		The higher water pressure on either sides of the boats	

	1	caused its closer to each other. <i>Tekanan air yang tinggi bersebelahan dengan bot laju menyebabkan bot mendekati antara satu dengan lain.</i>					
(c)	1,2	<table border="1"> <thead> <tr> <th>Design</th> <th>Reason</th> </tr> </thead> <tbody> <tr> <td>The surface of the boat must be smooth/ coated with wax. <i>Permukaan papan luncur harus licin / disadur dengan lilin</i></td> <td>Reduce water friction. <i>Mengurangkan geseran air.</i></td> </tr> </tbody> </table>	Design	Reason	The surface of the boat must be smooth/ coated with wax. <i>Permukaan papan luncur harus licin / disadur dengan lilin</i>	Reduce water friction. <i>Mengurangkan geseran air.</i>	
Design	Reason						
The surface of the boat must be smooth/ coated with wax. <i>Permukaan papan luncur harus licin / disadur dengan lilin</i>	Reduce water friction. <i>Mengurangkan geseran air.</i>						
	3,4	<table border="1"> <tbody> <tr> <td>The shape of the boat should be streamlined/ aerodynamic/aerofoil. <i>Bentuk papan luncur harus berbentuk larus/aerodinamik/aerofoil</i></td> <td>Reduce the water friction/increase the lift force. <i>Mengurangkan geseran air/ menambahkan daya angkat.</i></td> </tr> </tbody> </table>	The shape of the boat should be streamlined/ aerodynamic/aerofoil. <i>Bentuk papan luncur harus berbentuk larus/aerodinamik/aerofoil</i>	Reduce the water friction/increase the lift force. <i>Mengurangkan geseran air/ menambahkan daya angkat.</i>			
The shape of the boat should be streamlined/ aerodynamic/aerofoil. <i>Bentuk papan luncur harus berbentuk larus/aerodinamik/aerofoil</i>	Reduce the water friction/increase the lift force. <i>Mengurangkan geseran air/ menambahkan daya angkat.</i>						
	5,6	<table border="1"> <tbody> <tr> <td>The material used for the boat should be of low density (light) and strong. <i>Bahan yang digunakan untuk papan luncur harus berketumpatan rendah (ringan) dan kuat.</i></td> <td>Easy to float/ not easy to break/ can travel faster. <i>Senang mengapung / tidak mudah pecah/ boleh bergerak dengan lebih laju.</i></td> </tr> </tbody> </table>	The material used for the boat should be of low density (light) and strong. <i>Bahan yang digunakan untuk papan luncur harus berketumpatan rendah (ringan) dan kuat.</i>	Easy to float/ not easy to break/ can travel faster. <i>Senang mengapung / tidak mudah pecah/ boleh bergerak dengan lebih laju.</i>			
The material used for the boat should be of low density (light) and strong. <i>Bahan yang digunakan untuk papan luncur harus berketumpatan rendah (ringan) dan kuat.</i>	Easy to float/ not easy to break/ can travel faster. <i>Senang mengapung / tidak mudah pecah/ boleh bergerak dengan lebih laju.</i>						
	7,8	<table border="1"> <tbody> <tr> <td>Material used for the sail should be waterproof/ low density/ light and elastic. <i>Bahan yang digunakan untuk layar harus kalis air/ berketumpatan rendah/ ringan dan kenyal.</i></td> <td>So that the sail not absorb water/ sail faster/ not easy to tear off/ be able to withstand strong winds. <i>Supaya layar itu tidakmenyerap air/berlayar dengan lebih cepat/ tidak mudah koyak/ boleh menahan angin kencang.</i></td> </tr> </tbody> </table>	Material used for the sail should be waterproof/ low density/ light and elastic. <i>Bahan yang digunakan untuk layar harus kalis air/ berketumpatan rendah/ ringan dan kenyal.</i>	So that the sail not absorb water/ sail faster/ not easy to tear off/ be able to withstand strong winds. <i>Supaya layar itu tidakmenyerap air/berlayar dengan lebih cepat/ tidak mudah koyak/ boleh menahan angin kencang.</i>			
Material used for the sail should be waterproof/ low density/ light and elastic. <i>Bahan yang digunakan untuk layar harus kalis air/ berketumpatan rendah/ ringan dan kenyal.</i>	So that the sail not absorb water/ sail faster/ not easy to tear off/ be able to withstand strong winds. <i>Supaya layar itu tidakmenyerap air/berlayar dengan lebih cepat/ tidak mudah koyak/ boleh menahan angin kencang.</i>						
	9,10	<table border="1"> <tbody> <tr> <td>The size of the sail should be wide and large. <i>Saiz layar harus lebar dan besar.</i></td> <td>Traps more wind/ causes a bigger lift force/ increases the resistance towards air. <i>Memerangkap lebih banyak angin /menghasilkan daya angkat yang lebih besar/menambah rintangan terhadap udara.</i></td> </tr> </tbody> </table>	The size of the sail should be wide and large. <i>Saiz layar harus lebar dan besar.</i>	Traps more wind/ causes a bigger lift force/ increases the resistance towards air. <i>Memerangkap lebih banyak angin /menghasilkan daya angkat yang lebih besar/menambah rintangan terhadap udara.</i>			
The size of the sail should be wide and large. <i>Saiz layar harus lebar dan besar.</i>	Traps more wind/ causes a bigger lift force/ increases the resistance towards air. <i>Memerangkap lebih banyak angin /menghasilkan daya angkat yang lebih besar/menambah rintangan terhadap udara.</i>						

**TOTAL MARKS = 20**

--

<b>QUESTION 10</b>	<b>Mark</b>	<b>Answer</b>	<b>Note</b>				
(a)(i)	1	Charge per unit time	.				
(a)(ii)	1	Diagram 9.1 is connected in series and diagram 9.2 connected in parallel					
	1	The reading of ammeter in diagram 9.2 is higher than 9.1// vice versa					
	1	The reading of voltmeter in diagram 9.1 is higher than 9.2// vice versa					
	1	The effective resistance in diagram 9.1 is higher than 9.2// vice versa					
	1	The higher the effective resistance the lower the current// vice versa					
	1	When the circuit connected in series the effective resistance is higher// vice versa					
	1						
(b)	1	240 V	Correct arrangement Correct symbols				
	1		Add switches				
	1		Correct arrangement				
	1		Correct symbols				
	1						
(c)		<table border="1"> <thead> <tr> <th><b>Design</b></th> <th><b>Reason</b></th> </tr> </thead> <tbody> <tr> <td>Modification</td> <td>Reason</td> </tr> </tbody> </table>	<b>Design</b>	<b>Reason</b>	Modification	Reason	
<b>Design</b>	<b>Reason</b>						
Modification	Reason						

	1,2	Tungsten	Higher resistance// can withstand high temperature// higher resistivity	
	3,4	Coil wire	Concentrate the heat and produce brighter light	
	5,6	Thin wire	Becomes hot easily	
	7,8	High melting point	Not melt easily//long lasting	
	9,10	Low pressure gas inside the bulb	Long lasting// not easily	

**TOTAL MARKS = 20**

**SCHEME PAPER 2**  
**SKEMA KERTAS 2**  
**SECTION C**  
**BAHAGIAN C**

<b>QUESTION 11</b>	<b>Mark</b>	<b>Answer</b>	<b>Note</b>
(a)(i)	1	<p><b><i>State the meaning correctly</i></b>            The total reflection of a beam of light at the interface of one medium and another medium of lower refractive index (optically less dense) , when the angle of incidence to the second medium exceeds a specific critical</p>	
(a)(ii)	1 1	<p><b><i>Complete the ray diagram in optical fibres</i></b></p>	
(b)	1 1	<p><b><i>State the function correctly</i></b>            The objective lens of a optical fibres produces a real image of the distant object.  <i>Kanta objektif gentian optik menghasilkan imej nyata pada jarak objek.</i>            The eyepiece lens acts as a magnifying glass for looking at this small real image.  <i>Kanta mata bertindak sebagai kanta pembesar untuk melihat imej nyata yang kecil.</i></p>	
(c)(i)		<p><b><i>State the subuition correctly</i></b></p> $\frac{1}{f} = \frac{1}{V} + \frac{1}{U}$	

		$\frac{1}{10} = \frac{1}{30} + \frac{1}{V}$	<b>Answer with unit</b>
		$\frac{1}{V} = \frac{1}{10} - \frac{1}{30}$	
(ii)	1	$V = 15\text{cm}$	
		Magnification = $\frac{V}{U}$	
	1	$= \frac{15}{30}$	
	1	$= \frac{1}{2}$	
(d)	1	An outer cladding with low <i>Lapisan luar yang mempunyai indeks biasan rendah.</i>	<b>Accept any reasonable modification</b>
	1	Produced the angle of incidence of the light ray inside the fibre is always greater than the critical angle and no light escape. <i>Menghasilkan sudut tuju cahaya yang masuk dalam gentian optik sentiasa lebih besar daripada sudut genting dan tiada cahaya yang lesap.</i>	
	1	An inner core with high <i>Teras dalam yang mempunyai indeks biasan tinggi</i>	
	1	Produces total internal reflection when light travels inside the optical fibre. <i>Menghasilkan pantulan dalam penuh apabila cahaya bergerak di dalam gentian optic.</i>	
	1	High flexibility <i>Kemuluran tinggi</i>	
	1	Can be used for a longer distance <i>Boleh digunakan untuk jarak jauh</i>	
	1	A diameter of fibre is small. <i>Diameter gentian optic adalah halus</i>	
	1	Capable of carrying thousands of data signals simultaneously. <i>Berupaya membawa ribuan isyarat data secara serentak.</i>	
	1	The suitable optical fibre can be used is R. <i>Gentian optik yang sesuai dipilih adalah R.</i>	
	1	Refractive index of outer cladding is lower, refractive index of inner core is higher, flexibility high and diameter of fibre low. <i>Sebab R mempunyai indeks biasan lapisan luar rendah, indeks biasan teras tinggi, kelenturan tinggi dan diameter kecil.</i>	

**TOTAL MARKS = 20**

QUESTION 12	Mark	Answer	Note										
(a)(i)	1 1 1 1 1	<p>Potential energy <math>\longrightarrow</math> Kinetic energy <math>\longrightarrow</math>            Electrical energy</p> <p>The cost of generation of electricity is reduced because high voltage transmission of energy greatly reduces energy loss in the cables</p> <p>Repair work and maintenance can be carried out at any power station at any time</p> <p>To ensure the supply of the power is continuous</p> <p>The generation of electricity by each station can be controlled and regulated according to the demand pattern</p>											
(a)(ii)	1,2 3,4 5,6 7,8 9,10	<table border="1"> <thead> <tr> <th>Characteristic</th><th>Reason</th></tr> </thead> <tbody> <tr> <td>Soft iron core</td><td>Easy magnetized and demagnetised</td></tr> <tr> <td>Laminated</td><td>Less eddy current/ reduce energy loss</td></tr> <tr> <td>Thick wire</td><td>Reduce resistance/ more current</td></tr> <tr> <td>Copper wire</td><td>Low resistance/ reduce the lost of heat</td></tr> </tbody> </table> <p>Choose Q. Soft iron core, laminated, thick wire and copper wire.</p>	Characteristic	Reason	Soft iron core	Easy magnetized and demagnetised	Laminated	Less eddy current/ reduce energy loss	Thick wire	Reduce resistance/ more current	Copper wire	Low resistance/ reduce the lost of heat	
Characteristic	Reason												
Soft iron core	Easy magnetized and demagnetised												
Laminated	Less eddy current/ reduce energy loss												
Thick wire	Reduce resistance/ more current												
Copper wire	Low resistance/ reduce the lost of heat												
(b)	1 1 1 1 1	<p>(i) 12 V</p> <p>(ii) <math>\frac{N_p}{N_s} = \frac{V_p}{V_s}</math></p> $= \frac{240 \times 200}{12}$ $= 4000$ <p>(iii) Efficiency <math>= \frac{P_o}{P_i} \times 100</math></p> $= \frac{240 \times 0.2 \times 100}{48}$											

		= 100 %	
<b>TOTAL MARKS = 20</b>			

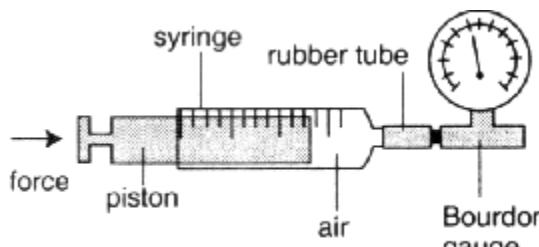
FIZIK KERTAS 3

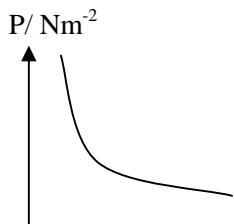
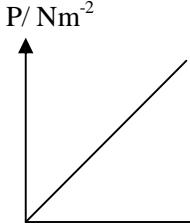
**BAHAGIAN A**

<b>Question</b>	<b>Marks</b>	<b>Marking Scheme</b>																		
1(a)(i)	1	<b>State the manipulated variable correctly ;</b> Height of inclined plane from the surface, $h$																		
(ii)	1	<b>State the responding variable correctly ;</b> Velocity of the trolley, $v$																		
(iii)	1	<b>State one fixed variable;</b> Mass of trolley // No. of trolley // frequency of power supply, $f$																		
(b)	1 1 1 1 1 1	<p><b>Tabulate <math>h</math>, <math>s</math> and <math>v</math> correctly in the table.</b></p> <p>A Shows a table which have <math>h</math>, <math>s</math> and <math>v</math>.      B State the correct unit of <math>h/cm</math>, <math>s/cm</math> and <math>v/cms^{-1}</math>.      C All values of <math>h</math> are correct .      D Values of <math>s</math> are correct.      E Values of <math>v</math> are correct.      F All the values are consistent in 1 d.p or 2 d.p.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th><math>h/cm</math></th> <th><math>s/cm</math> <math>\pm 0.1</math></th> <th><math>v/cms^{-1}</math></th> </tr> </thead> <tbody> <tr> <td>20.0</td> <td>5.8</td> <td>29.0</td> </tr> <tr> <td>30.0</td> <td>8.0</td> <td>40.0</td> </tr> <tr> <td>40.0</td> <td>10.2</td> <td>51.0</td> </tr> <tr> <td>50.0</td> <td>12.5</td> <td>62.5</td> </tr> <tr> <td>60.0</td> <td>14.8</td> <td>74.0</td> </tr> </tbody> </table>	$h/cm$	$s/cm$ $\pm 0.1$	$v/cms^{-1}$	20.0	5.8	29.0	30.0	8.0	40.0	40.0	10.2	51.0	50.0	12.5	62.5	60.0	14.8	74.0
$h/cm$	$s/cm$ $\pm 0.1$	$v/cms^{-1}$																		
20.0	5.8	29.0																		
30.0	8.0	40.0																		
40.0	10.2	51.0																		
50.0	12.5	62.5																		
60.0	14.8	74.0																		
(c)	5	<p><b>Draw the graph of <math>v</math> against <math>h</math>.</b></p> <p>A - Label y-axis and x-axis correctly      B - States the unit at both axis correctly      C - Both axes with the even and uniform scale      D - 5 points correctly plotted      E - a smooth best straight line      F - minimum size of the graph is <math>5 \times 4</math>      (Squares of <math>2 \times 2</math> cm)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Number of ✓</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>6</td> <td>5</td> </tr> <tr> <td>5</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 ✓	Score	6	5	5	4	3-4	3	2	2	1	1						
Number of ✓	Score																			
6	5																			
5	4																			
3-4	3																			
2	2																			
1	1																			
d	1	<b>State the correct relationship based on the candidate's graph</b> $v$ increase linearly to $h$																		
e	1	<b>State ONE correct precaution so as to produce an accurate result of the experiment</b> The position of the eye perpendicular to the scale when takes the reading to avoid errors due to parallax/systematic error.																		

Total	16 Marks
2 (a)	Shows extrapolation on the graph , intercept y-axis 7 N
(b) (i)	Frictional force
(ii)	.a increased
(c) (i)	Shows on the graph appropriate right triangle ( $> 5 \times 4$ )  Gradient , m = $\frac{35 - 10}{9 - 1}$ = $3.125 \text{ N m}^{-1}\text{s}^2$
(ii)	Marked on the graph  $a = 5.5 \text{ ms}^{-2} - 6.0 \text{ ms}^{-2}$
(iii)	$F$ increases linearly with a
(d)	Mass
(e)	1. Make sure elastic strings are stretched at constant length. 2. The position of the eye perpendicular to the scale of the metre rule when measuring the ticker tape to avoid errors due to parallax/systematic error
	<b>TOTAL</b> <b>12</b>

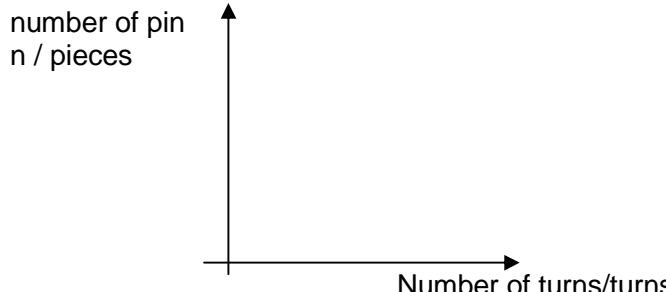
**BAHAGIAN B**

NO	ANSWER	Marks						
3(a)	Inference : The pressure of the gas depends on the volume which acts on it.	1						
(b)	Hypothesis: The smaller the pressure, the larger is the volume of a fixed mass of gas. / The volume of a gas varies inversely with its pressure.	1						
(c)(i)	Aim : To investigate the relationship between the pressure and volume for a fixed mass of gas at a constant temperature.	1						
(ii)	Variables : Manipulated : Gas volume, V Responding : Gas pressure, P Fixed : Gas temperature, T or mass of gas, m	1 1						
(iii)	Apparatus : Glass syringe, a short rubber tube and Bourdon gauge	1						
(iv)	Arrangement of apparatus: 	1						
(v)	Procedure: 1. The apparatus is set up as shown in the diagram above. 2. The piston of the syringe is adjusted until the volume of air in the syringe is $100 \text{ cm}^3$ at atmospheric pressure. 3. The syringe is connected to a Bourdon gauge and the pressure of the air in the syringe is observed and recorded. 4. The piston is then pushed in so that the volume of air trapped is $90 \text{ cm}^3$ . The pressure is again recorded, this procedure is repeated for enclosed volumes of $80\text{cm}^3$ , $70 \text{ cm}^3$ and $60 \text{ cm}^3$ .	1 1 1 1						
(vi)	<table border="1"> <thead> <tr> <th>Volume V / <math>\text{cm}^3</math></th> <th><math>\frac{1}{V}</math> / <math>\text{cm}^{-3}</math></th> <th>Pressure P / <math>\text{Nm}^{-2}</math></th> </tr> </thead> <tbody> <tr> <td>100</td> <td></td> <td></td> </tr> </tbody> </table>	Volume V / $\text{cm}^3$	$\frac{1}{V}$ / $\text{cm}^{-3}$	Pressure P / $\text{Nm}^{-2}$	100			1
Volume V / $\text{cm}^3$	$\frac{1}{V}$ / $\text{cm}^{-3}$	Pressure P / $\text{Nm}^{-2}$						
100								

	<table border="1"> <tr><td>90</td><td></td><td></td></tr> <tr><td>80</td><td></td><td></td></tr> <tr><td>70</td><td></td><td></td></tr> <tr><td>60</td><td></td><td></td></tr> </table> <p>*colum PV or P (1/V)</p>	90			80			70			60			
90														
80														
70														
60														
(vii)	  <p>Pressure of a fixed mass of gas is inversely proportional to its volume.</p>	1												
	<b>TOTAL</b>	<b>12</b>												

4(a)		1 Menyatakan inferensi dengan betul Magnetic field strength depends on the number of turns	1
(b)		1 Menyatakan hipotesis dengan betul. The magnetic field strength will increase when the number of turns increase	1
(c)	(i)	1 menyatakan tujuan dengan betul To investigate the relationship between magnetic field strength and number of turn on the coil	
	(ii)	1 menyatakan pembolehubah manipulasi dan begerakbalas dengan betul manipulated : number of turns responding : magnetic field strength //number of small iron pin	
	(iii)	1 menyatakan bermbolehubah yang dimalarkan dengan betul Fixed : size of current// type of core	
		1 menyatakan alat radas dan bahan Retort stand, soft iron core, connector wire, PVC insulated copper wire,	

	<p>small iron pin, ammeter, rheostat , battery/ power supply</p> <p>1 menyatakan atau melukis gambar rajah susuan radas berlabel.</p> <p>Soft iron core</p> <p>turns</p> <p>small iron pins</p> <p>retort stand</p>
(v)	<p>1 Menyatakan kaedah mengawal pembolehubah manipulasi</p> <p>The soft iron core is wound with <b>20 turns</b> of insulated copper wire and set up as shown in diagram above.</p>
(vi)	<p>1 Menyatakan kaedah mengawal pembolehubah bergerakbalas. The switch is turned on and the rheostat adjusted until the ammeter Reading is 1.0 A. The beaker containing small steel pin then brought near the iron core. <b>Count and record</b> the number of small iron pin attached to the soft Iron core.</p> <p>1 Menyatakan ulangan eksperimen Repeat the experiment by winding the soft iron core with, 30 turns, 40 turns, 50 turns and 60 turns.</p> <p>1 menyatakan kaedah menjadual data dengan betul tajuk/symbol dengan unit yang betul</p>

	(vii)	<table border="1"> <thead> <tr> <th>Number of turns, n, turns</th><th>Number of pins attached, n /pieces</th></tr> </thead> <tbody> <tr> <td><math>20 / n_1</math></td><td></td></tr> <tr> <td><math>30 / n_2</math></td><td></td></tr> <tr> <td><math>40 / n_3</math></td><td></td></tr> <tr> <td><math>50 / n_4</math></td><td></td></tr> <tr> <td><math>60 / n_5</math></td><td></td></tr> </tbody> </table>	Number of turns, n, turns	Number of pins attached, n /pieces	$20 / n_1$		$30 / n_2$		$40 / n_3$		$50 / n_4$		$60 / n_5$			
Number of turns, n, turns	Number of pins attached, n /pieces															
$20 / n_1$																
$30 / n_2$																
$40 / n_3$																
$50 / n_4$																
$60 / n_5$																
		<p>(vii) 1 menyatakan kaedah menganalisa data dengan betul</p>  <p><b>JAWAPAN TAMAT</b></p>	10													