

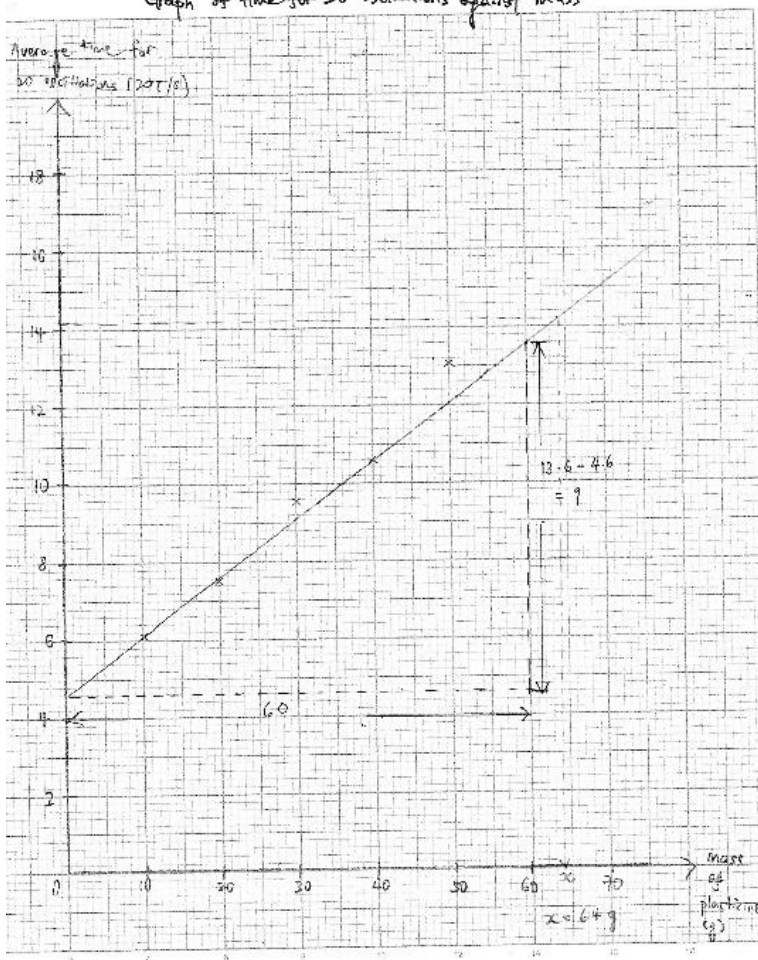
**MARKING SCHEME**  
**PAPER 3**  
**MAY 2017**  
**(Physics 4531/3)**  
**SMJK YU HUA KAJANG**  
**PPT FIZIK TING 4**

**QUESTION 1**

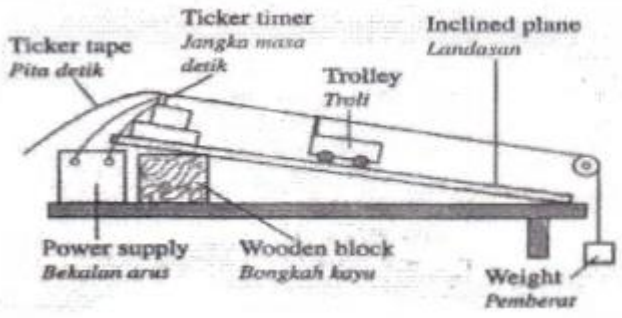
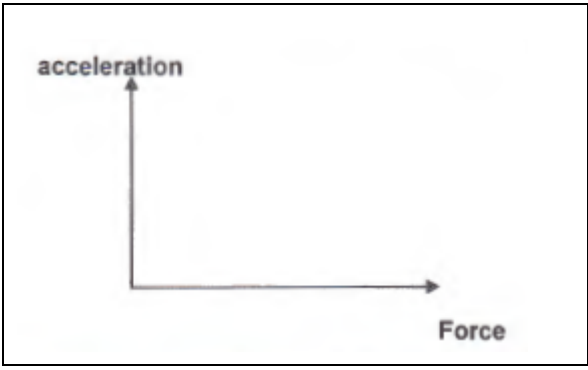
No	Marking Criteria	Marks																		
(a)	<b>Zero Error</b> <b>-0.02mm</b>	<b>1</b> <b>1</b>																		
(b)(i)	<b>Manipulated Variable</b> Mass . m	1																		
(ii)	<b>Responding Variable</b>	Both answers right 1																		
(iii)	Diameter, d <b>Constant Variable</b> Density / Height																			
(c)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Mass m / g</th> <th>Diameter , d / mm</th> <th><math>d^2</math> / mm<sup>2</sup></th> </tr> </thead> <tbody> <tr> <td>5</td> <td><math>3.64 + 0.02 = 3.66</math></td> <td>13.40</td> </tr> <tr> <td>10</td> <td><math>5.15 + 0.02 = 5.17</math></td> <td>26.73</td> </tr> <tr> <td>15</td> <td><math>6.31 + 0.02 = 6.33</math></td> <td>40.07</td> </tr> <tr> <td>20</td> <td><math>7.29 + 0.02 = 7.31</math></td> <td>53.44</td> </tr> <tr> <td>25</td> <td><math>8.15 + 0.02 = 8.17</math></td> <td>66.75</td> </tr> </tbody> </table>	Mass m / g	Diameter , d / mm	$d^2$ / mm <sup>2</sup>	5	$3.64 + 0.02 = 3.66$	13.40	10	$5.15 + 0.02 = 5.17$	26.73	15	$6.31 + 0.02 = 6.33$	40.07	20	$7.29 + 0.02 = 7.31$	53.44	25	$8.15 + 0.02 = 8.17$	66.75	1 1 1 1
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(d)	<p><b>Draw a graph of <math>d^2</math> against m (Straight Line thro origin)</b></p>	3																		



## QUESTION 2

No	Marking Criteria	Marks
(a)	When mass increases 20T increases <i>or</i> When mass increases 20T increases uniformly <i>or</i>	1
(b)	<p><math>x = 64 \text{ gm}</math> <i>(if student give answers in decimal form, like 63.5 or 64.7 0 marks)</i> <i>No other answers are accepted</i></p> <p>On Graph, a line is drawn from 14.2 sec, and meets the x-axis at 64g As seen below</p>	2 1
(c)	<p><b>Gradient of graph.</b> A triangle is drawn on the graph. The value of y and x are shown.</p>  <p><i>Student did not draw triangle and show the x and y values, (0 marks)</i> <i>Student only draw the triangle and no values of x and y were shown (1 mark)</i> Gradient of line</p> <p><math>K = 9/60 = 0.15 \text{ sg}^{-1}</math> <i>(Unit not correct, 0 mark)</i></p>	2 1
(d)	This setup could measure mass	1
(e)	Man Hong would have to use the same calibrated graph of 20T against mass that was done on Earth.	1 1



														
(v)	<p><b>State the method to control the manipulated variable</b></p> <ol style="list-style-type: none"> <li>1. The ticker timer is switched on.</li> <li>2. The trolley is pulled down with one elastic cord that is stretched with a constant length ( eg 5 cm)</li> <li>3. Acceleration of the trolley is obtained based on the ticker tape by using the formula <math>a = (v - u) / t</math></li> </ol>	<p>1</p> <p>1</p>												
	<p><b>State the method of measuring the responding variable</b></p> <ol style="list-style-type: none"> <li>4. Repeat step 2 &amp; 3 above by using 2, 3, 4 and 5 elastic cords all stretched to the same length of 5cm</li> </ol>	<p>1</p>												
(vi)	<p><b>State how the data is tabulated</b></p> <table border="1" data-bbox="609 898 1112 1192"> <thead> <tr> <th>Force, F // Number of elastic cord /// No of slotted weight</th> <th>Acceleration, a</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> </tr> <tr> <td>2</td> <td></td> </tr> <tr> <td>3</td> <td></td> </tr> <tr> <td>4</td> <td></td> </tr> <tr> <td>5</td> <td></td> </tr> </tbody> </table>	Force, F // Number of elastic cord /// No of slotted weight	Acceleration, a	1		2		3		4		5		<p>1</p>
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3														
4														
5														
(vii)	<p><b>State how the data is analysed</b></p> 	<p>1</p>												
<b>TOTAL MARKS</b>		12												

**THE END**  
**TOTAL 40 MARKS**  
**COMPILED BY PRADEEP KUMAR**