



**SEKOLAH BERASRAMA PENUH
BAHAGIAN PENGURUSAN
SEKOLAH BERASRAMA PENUH / KLUSTER
KEMENTERIAN PELAJARAN MALAYSIA**

PEPERIKSAAN PERCUBAAN SPM 2008

FIZIK

PERATURAN PERMARKAHAN

KERTAS 1, KERTAS 2 & KERTAS 3

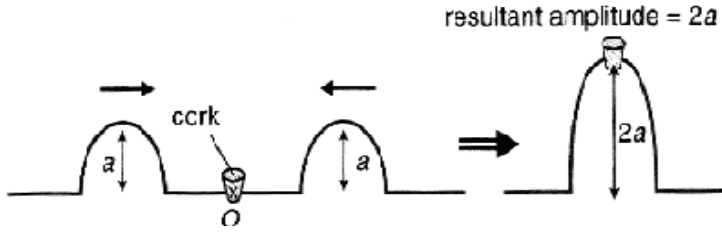
Physics Paper 1
Trial Examination SBP 2008
Marking Scheme

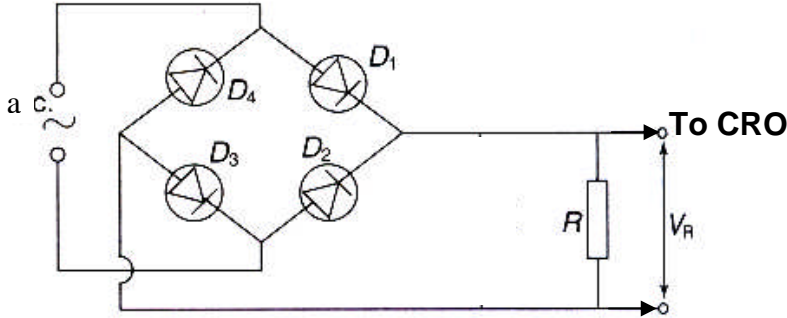

1	C	26	A
2	B	27	C
3	D	28	A
4	A	29	B
5	B	30	B
6	C	31	A
7	B	32	A
8	D	33	C
9	C	34	A
10	B	35	C
11	A	36	C
12	B	37	A
13	C	38	C
14	B	39	D
15	C	40	B
16	A	41	B
17	A	42	D
18	A	43	A
19	D	44	C
20	D	45	C
21	C	46	B
22	C	47	B
23	B	48	B
24	A	49	B
25	C	50	D

[50 marks]

Physics Paper 2
Trial Examination SBP 2008
Marking Scheme

Question Number	Marking Scheme	Marks
1. (a) (i)	Acceleration	1
(ii)	Displacement	1
(b)	OA : Uniform acceleration / velocity increases uniformly AB : Uniform velocity / acceleration is zero	1 1
Total		4
2. (a)	Fast moving electron	1
(b)	GM tube	1
(c) (i)	Decrease//low	1
(ii)	The beta particle is block by the juice	1
(d)	Low penetrating power	1
Total		5
3 (a)	P :Tension of the spring and label P correctly on the diagram Q :Weight and label Q correctly on the diagram	1 1
(b) (i)	Draw triangle Correct direction	1 1
(ii)	$F/6 = \tan 30^0$ $F = 6 \times \tan 30^0$ $= 3.464 \text{ N}$	1 1
Total		6

4. (a)	Interference is the <u>superposition</u> of two waves originating from two <u>coherent sources</u> .	1
(b) (i)	 <p style="text-align: center;">resultant amplitude = $2a$</p>	1
(ii)	Constructive Interference	1
(iii)	The cork will move up to to highest level	1
(c) (i)	$\lambda = \frac{ax}{D} = \frac{5 \times 3}{10} = 1.5 \text{ cm}$	2
(ii)	decreases.	1
Total		7
5. (a)	Mass divide by volume	1
(b) (i)	Density sphere A less than B	1
(ii)	Weight A less than B	1
(iii)	The weight of water displaced by A less than B	1
(iv)	Larger weight of sphere, displaced bigger weight of water	1
(v)	Weight of water displaced = upthrust // When the weight of water displaced increase, upthrust increase	1
(c)	Archimedes' principle	1
(d)	Submarine	1
Total		8
6. (a) (i)	Diagram 6.1 – anode of the diode is connected to positive terminal of dry cell. Diagram 6.2 – anode of diode is connected to the negative terminal of dry cell.	1
(ii)	Bulb in diagram 6.1 lights up, bulb in Diagram 6.2 does not lights	1

	up.	
(iii)	The bulb does not light up when the positive diode is connected to negative battery // reversed biased The bulb light up when the positive diode is connected to positive battery// forward biased	1
(b) (i)	 <p>- Ac power supply - arrangement of diodes (output & input)</p>	1 2
(ii)		1
(iii)	Capacitor	1
Total		8
7. (a) (i)	Increase	1
(ii)	Pressure	1
(b)	Pressure Law	1
(c)	$T_2 = \frac{P_2 T_1}{P_1} = \frac{230 \times 300}{200} = 345 \text{ K} // 72 \text{ } ^\circ\text{C}$ <p>Mk 1- Conversion of unit from $^\circ\text{C}$ to Kelvin Mk 2- Substitution Mk 3- Answer with correct unit</p>	3
(d) (i)	Wider surface area	1
(ii)	The pressure exerted on road is reduced	1
(iii)	Thick tyre thread	1
(iv)	To give better grip to the road	1
Total		10
8. (a)	Show the direction of current correctly on the solenoid.	1
(b) (i)	North pole	1
(ii)	Right hand grip rule	1

(iii)	1. Draw the pattern correctly. 2. Draw the direction of magnetic field correctly.	1 1 1
(c) (i)	Soft iron core	1
(ii)	Can be easily magnetised and demagnetised.	1
(iii)	U shaped core	1
(iv)	Strength of electromagnet is higher	1
(d)	1. when the switch is pressed, the circuit is closed 2. current flow through solenoid, the iron core is magnetised 3. Soft iron core is attracted to the electromagnet 4. strike the gong	3/4
Total		12
9.(a)	Reciprocal of focal length in meter	1
(b)	The object distance in Diagram 9.1 is closer than in Diagram 9.2 The image distance in Diagram 9.1 is further than in Diagram 9.2 The size of image in Diagram 9.1 is larger than in Diagram 9.2 The further the object distance, the closer the image distance The further the object distance, the smaller the size of image	1 1 1 1 1
(c)	The layers of air nearer the road warmer. The density of air decrease nearer to the road surface. The light travel from denser to less dense area. The light refract away from the normal When the angle of incidence exceed the critical angle, total internal reflection occurs (<i>maximum 4 marks</i>)	1 1 1 1 1
(d) (i)	Objective lens above // diagram Eyepiece below // diagram Correct arrangement of prisms // diagram	1 1 2

(c)	<ol style="list-style-type: none"> 1. rotate the coil in clock wise direction 2. the coil cut across the magnetic field 3. current is induced in the coil 4. the commuator change the direction in the coil so that the direction of current in external circuit I always the same. 	<p>1 1 1 1</p>
(d)	<ol style="list-style-type: none"> 1. use thin diaphragm 2. Easy to vibrate 3. Use strong material 4. Not easy to break 5. More number of turns of coil 6. Increase the rate of change of magnetic flux linkage // The magnitude of the induced current or is also increased 7. Thicker diameter of wire of coil 8. reduce the resistance of the coil 9. Using more powerful magnet to increase the strength of the magnetic field 10. Increase the rate of change of magnetic flux linkage //The magnitude of the induced current or induced electromotive force is also increased 	10
Total		20
11. (a)	Temperature is the measure of the <u>degree of hotness</u> of an object.	1
(b)	<ul style="list-style-type: none"> ➤ Thermometer is placed in the mouth of patient, ➤ Heat is transferred from patient's body to the thermometer. ➤ Thermal equilibrium between the thermometer and patient's body is reached when the net rate of heat transfer is zero. ➤ The thermometer and the patient's body are at the same temperature. The thermometer reading shows the temperature of the patient's body. 	4
(c)	<ol style="list-style-type: none"> 1. Low specific heat capacity of ice cream box 2. Easy get cold // becomes cool quickly 3. Smaller size of ice cream box 4. Easier to carry // easy too become cool 5. Plastic PVC 6. Poor conductor of heat 7. Bright colour of outer box 8. Does not absorb heat from surrounding quickly 9. R is chosen 10. because Low specific heat capacity of ice cream box, Smaller size of ice cream box, Plastic PVC, Bright colour of outer box 	10
(d) (i)	$L = \frac{Pt}{m}$	

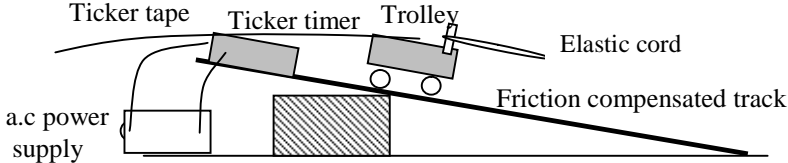
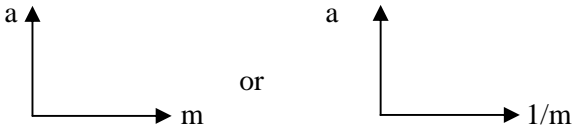
	$= \frac{0.1 \times 10^3 \times 156}{0.05}$ $= 312000 \text{ J kg}^{-1}$	2
(ii)	<p>t = 72 s (from graph)</p> $c = \frac{Pt}{m \theta}$ $= \frac{0.1 \times 10^3 \times 72}{0.05 \times 140}$ $= 1028.57 \text{ J kg}^{-1} \text{ } ^\circ\text{C}$	1 2
Total		20
12. (a)	Potential difference is defined as work done in moving a unit electric charge between two points.	1
(b)	The two dry cells are connected in parallel The effective e.m.f. remains the same The effective internal resistance of the two cells is smaller A larger current will flow through the bulb to make it brighter	1 1 1 1
(c)	<ol style="list-style-type: none"> 1. Diameter should be large 2. to reduce the resistance of the cables 3. Density should be low 4. the cables will be lighter and can be supported securely 5. The rate of expansion should be low 6. So there is less expansion and less sagging in the cables during hot days. 7. The melting point should be high 8. So the cables does not melting in high temperature. 9. Q is suitable 10. Diameter is large, density is low, the rate of expansion is is low and the melting point is high. 	10
(d) (i)	<p>Current = P/V</p> $= 9500/240$ $= 39.58\text{A}$	1
(ii)	<p>Power loss ,P</p> $= I^2R$ $= 39.58^2 \times 1$ $= 1566.6 \text{ W}$	2
(iii)	<p>Percentage of loss of power</p> $= \frac{1566.6}{9500} \times 100$ $= 16.49 \%$	2
Total		20

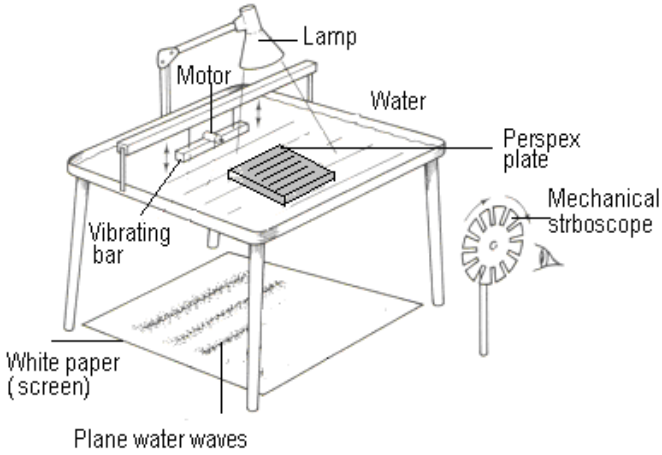
Physics Paper 3
Trial Examination SBP 2008
Marking Scheme

Question	Marks	Marking Scheme																		
1(a)(i)	1	State the manipulated variable correctly ; Height of inclined plane from the surface, h																		
(ii)	1	State the responding variable correctly ; Velocity of the trolley, v																		
(iii)	1	State one fixed variable; Mass of trolley // No. of trolley // frequency of power supply, f																		
(b)	1 1 1 1 1 1	<p>Tabulate h, s and v correctly in the table.</p> <p>A Shows a table which have h, s and v. B State the correct unit of h/cm, s/cm and v/cms⁻¹. C All values of h are correct . D Values of s are correct. E Values of v 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 style="text-align: center;">h/cm</th> <th style="text-align: center;">s/cm</th> <th style="text-align: center;">v/cms⁻¹</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">20.0</td> <td style="text-align: center;">5.8</td> <td style="text-align: center;">29.0</td> </tr> <tr> <td style="text-align: center;">30.0</td> <td style="text-align: center;">8.0</td> <td style="text-align: center;">40.0</td> </tr> <tr> <td style="text-align: center;">40.0</td> <td style="text-align: center;">10.2</td> <td style="text-align: center;">51.0</td> </tr> <tr> <td style="text-align: center;">50.0</td> <td style="text-align: center;">12.5</td> <td style="text-align: center;">62.5</td> </tr> <tr> <td style="text-align: center;">60.0</td> <td style="text-align: center;">14.8</td> <td style="text-align: center;">74.0</td> </tr> </tbody> </table>	h/cm	s/cm	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
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(c)	5	<p>Draw the graph of v against h.</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 5 x 4 (Squares of 2 x 2 cm)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Number of √</th> <th style="text-align: center;">Score</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">6</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">3-4</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">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	<p>State the correct relationship based on the candidate's graph v increase linearly to h</p>
e	1	<p>State ONE correct precaution so as to produce an accurate result of the experiment</p> <p>The position of the eye perpendicular to the scale when takes the reading to avoid errors due to parallax/systematic error.</p>
Total	16 Marks	
2 (a)	1	<p>State the relationship between R and l R is directly proportional to l</p>
(b)(i)	3	<p>Calculate the gradient of the graph and state the value within the acceptable range</p> <p>Show the triangle with an acceptable size (4 x 4 squares of 2 cm).</p> <p>Substitute correctly (according to the candidate's graph)</p> $m = \frac{6.3 - 0}{100.0 - 0}$ <p>State the correct value of the gradient with unit $= 0.063 \Omega\text{cm}^{-1}$</p>
(ii)	2	$\rho = mA$ $= 0.063 \times 1.5 \times 10^{-5}$ $= 9.375 \times 10^{-7} \Omega \text{ cm}$
(c) (i)	2	$R = 1.0 \Omega$
(ii)	3	$\frac{1}{R'} = \frac{1}{1.0} + \frac{1}{1.0}$ $\frac{1}{R'} = \frac{2}{1.0}$ $\therefore R' = 0.5 \Omega$
(d)	1	<p>State ONE correct precaution so as to produce an accurate result of the experiment</p> <p>The position of the eye perpendicular to the scale when takes the reading to avoid errors due to parallax/systematic error.</p>
Total	12 Marks	

SECTION B

Question 3	Marks	Answer	Note
(a)	1	<i>Making the right inference</i> Acceleration depends on mass	
(b)	1	<i>Building an appropriate hypothesis</i> The greater the mass, the greater the acceleration.	
(c)(i)	1	<i>Stating the aim of the experiment</i> To study the relationship between the acceleration and mass of an object under constant force	
(ii)	1 1	<i>Stating the correct variables</i> Manipulated variable : Mass, m Responding variable : Acceleration, a Fixed variable : Force	
(iii)	1	<i>List of appropriate apparatus and material</i> Ruler, A.C. power supply, runway	
(iv)	1	<i>Describing set up of the apparatus</i> 	
v)	1 1 1	<i>Stating the procedure of the experiment</i> Set up a friction compensated track. Attach a ticker tape to the trolley and pass the tape through the ticker timer. Pull the 1 kg trolley down the runway with the elastic cord kept stretched by the same amount of force. Calculate acceleration by analysing the ticker tape. Repeat by adding weights to the trolley so that the mass is 1.5 kg, 2.0 kg, 2.5 kg and 3.0 kg Record data Plot an a against m graph // Plot an a against 1/m graph .	
vi)	1	<i>Tabulating data</i> Show table with m and a as headings	
viii)	1	<i>Analysing data</i> 	**This mark may be given at the last line for procedure.
Total	12		

Question	mark	Marking Scheme
4 (a)	1	<p>State a suitable inference The wave length is influence by the depth of water</p>
(b)	1	<p>States a relevant hypothesis The wave length increases when the depth of water increase.</p>
(c)		<p>Describe a relevant and workable experimental framework</p> <p>1 State the aim of experiment To study the relationship between the depth of water and the wave length.</p> <p>1 State the manipulated variable and the responding variable Manipulated variable : The depth of water Responding variable : The wave length.</p> <p>1 State ONE variable that kept constant Fixed variable : The frequency of waves.</p> <p>Complete list of apparatus and materials Ripple tank, stroboscope, metre rule, Perspex plate and vibrator motor</p> <p>Note: A complete apparatus and materials means, with the apparatus and materials a set of data (manipulated and responding variables) can be obtained from the experiment</p> <p>State the workable arrangement of the apparatus</p> <p>1</p>  <p>1</p> <p>1 State the method of controlling the manipulated variable</p> <ol style="list-style-type: none"> The apparatus is set up as shown in figure. Arrange a ripple tank, and placed a piece of perspex with $h = 1.0$ cm placed in the centre of the tank. <p>1 State the method of measuring the responding variable</p>

