



**FORM 4**

**PHYSICS**

**MARKING SCHEME**

<b>SECTION A</b>		<b>40 MARKS</b>	
<b>Question</b>	<b>Answer</b>	<b>Mark</b>	<b>Additional Guidelines</b>
<b>1 a</b>	an upward/downward arrow drawn close to the hand	1	
<b>1 b</b>	a wavelength marked on the diagram, either the distance between two successive crests or troughs.	1	Accept any other suitable answer.
<b>1 c</b>	0.50 s	2	
<b>1 d</b>	0.70 m	2	
<b>1 e</b>	Wavelength decreases by half	2	Accept any other correct answer.

<b>2 a</b>	correct drawing of reflected rays with correct direction marked on lines and correct drawing of normal.	1 1	
<b>2 b</b>	correct labelling of angle of incidence and angle of reflection	2	
<b>2 c</b>	1 m	1	
<b>2 d</b>	virtual same size	1 1	
<b>2 e</b>	laterally inverted	1	

<b>3 a</b>	$10 \text{ m/s}^2$	1	
<b>3 b</b>	$0 \text{ m/s}$	1	
<b>3 c</b>	$s = ut + \frac{1}{2}at^2 \rightarrow 354 = \frac{1}{2} \times 10 \times t^2$ $t^2 = 70.8$ $t = 8.41 \text{ s}$	1 1 1	
<b>3 d</b>	$v = u + at \rightarrow v = 10 \times 8.41$ $v = 84 \text{ m/s}$	1 1	
<b>3 e</b>	a straight line from the origin	1	

<b>4 a</b>	longitudinal waves	1	
<b>4 b</b>	$320 \text{ m/s}$	2	1 mark for correct working
<b>4 c</b>	drawing of correct wave pattern	1	
<b>4 d i</b>	an ultrasound wave is a high frequency wave which cannot be heard by humans.	1	
<b>4 d ii</b>	$24000 \text{ Hz}$	1	
<b>4 d iii</b>	medical applications, motion sensors, etc	2	Accept any other correct answers.

5 a	semiconductor	1	
5 b	B	1	
5 c i	No	1	
5 c ii	graph shown is not a straight line graph	2	
5 d	its resistance decreases	1	
5 e	Diode or LDR or LED and their corresponding correct symbols	1, 1	

SECTION B		45 MARKS	
Question	Answer	Mark	Additional Guidelines
6 a	0 N	1	
6 b	Graph: <ul style="list-style-type: none"> <li>has correct axis</li> <li>is drawn over more than half the graph</li> <li>correct title</li> <li>is a straight line</li> <li>passes through origin</li> </ul>	1 1 1 1 1	
6 c	800 m	2	1 mark for correct working
6 d	36000 kg m/s	2	1 mark for correct working
6 e	0.5 m/s <sup>2</sup>	2	1 mark for correct working
6 f	900 N	2	1 mark for correct working
6 g	<i>the braking distance will increase</i>	1	

7 a	Ball A	1	
7 b	(-) sign on Ball A (+) sign on Ball B	1 1	
7 c	it would get attracted; because a charged polythene carries a negative charge	1 1	
7 d i	correct labelling of ammeter correct labelling of voltmeter	1 1	
7 d ii	correct direction of current	1	
7 d iii	40 Ω	2	
7 d iv	60 Ω	1	
7 d v	4.0 V	1	
7 d vi	8.0 V	1	
7 d vii	because bulbs Y and Z have the same resistance	2	

8 a	correct labelling of the object and image	2	
8 b i	adjusted, sharp	2	
8 b ii	object distance/height, image distance/height	2	
8 c	real; inverted; diminished;	2	Any two correct answers.
8 d	0.5	2	
8 e i	correct ray diagram showing two rays forming the image	2	

<b>8 e ii</b>	image is marked and correctly labelled.	1	
<b>8 f</b>	5 <i>cm</i>	1	
<b>8 g</b>	camera	1	Accept any other correct answer.

**Please Note:** When marking questions that involve calculations, apply the ‘**follow through**’ rule. This means that if a student gives a wrong value for part (a) of a question and then uses the value of (a) in the subsequent calculations, marks should be deducted for part (a) only. The subsequent parts should be given full marks if these are correct.