



Annual Examinations for Secondary Schools 2014

FORM 4

PHYSICS

MARKING SCHEME

SECTION A		40 MARKS	
Question	Answer	Mark	Additional Guidelines
1 a (i)	C	1	
1 a (ii)	A	1	
1 b (i)	8 waves	1	
1 b (ii)	5 cm	1	
1 b (iii)	0.125 s, 8 Hz	2	
1 b (iv)	Decreases, Same	2	

2 a (i)	Reflection, Refraction	2	
2 a (ii)	Correct Ray Drawings	2	
2 b (i)	Convex Lens	1	
2 b (ii)	2	1	
2 b (iii)	Virtual, Upright	2	

3 a	Correct drawing of: a force by the man on the wall, the reaction force of the wall on the man.	2	
3 b	100 N	1	
3 c	Newton's Third Law	1	
3 d (i)	Equal to 8.0 N	1	
3 d (ii)	0.6 N 0.2 m/s ²	1 2	1 mark for correct unit

4 a	$4.28 \times 10^{-10} \text{m}$	1	
4 b	Same speed, Transverse	2	
4 c	To check for broken bones	2	
4 d	Infra-Red Radiation Visible Light Radio Waves	3	

5 a	Thermistor	1	
5 b	0.1 A	2	
5 c	120 Ω	2	
5 d	400 Ω	2	
5 e	The current would decrease since the total resistance of the thermistor and the 100 Ω in parallel increases with decreasing temperature.	1	accept any other explanation that is similar to the one given

SECTION B		45 MARKS	
Question	Answer	Mark	Additional Guidelines
6 a	Correct Graph	5	1 mark for correct labelling of axes 1 mark for graph title 2 marks for correct plotting of graph 1 mark for correct size of graph
6 b (i)	27 00 kg m/s	2	1 mark for correct unit
6 b (ii)	0 kg m/s	1	
6 b (iii)	20 m/s ²	2	
6 b (iv)	1800 N	2	1 mark for correct unit
6 c	Decreases	1	
6 d	Choose 2 from: safety belts, crumple zones or air bags and headrests	2	

7 a (i)	constant	1	
7 a (ii)	accelerating	1	
7 a (iii)	16	1	
7 a (iv)	0.067 m/s ²	2	
7 a (v)	1920 m	2	
7 a (vi)	11.20 m/s	2	
7 b (i)	Weight	1	
7 b (ii)	0 m/s	2	
7 b (iii)	30 m/s	2	
7 b (iv)	Equal to	1	

8 a (i)	to	1	
8 a (ii)	negatively, positively	1	
8 a (iii)	repel	1	
8 a (iv)	same	1	
8 b (i)	Correct circuit diagram that shows all the component symbols connected in series	3	1 mark for correct symbol of ammeter 1 mark for correct symbol of resistors 1 mark for correct symbol of battery and correct wire connections
8 b (ii)	Current	1	
8 b (iii)	Voltmeter	1	
8 b (iv)	Correct circuit symbol of a voltmeter is drawn connected parallel to the 10 Ω resistor	1	

8 b (v)	25 Ω	2	deduct 1 mark if unit is not given
8 b (vi)	0.48 A	2	deduct 1 mark if unit is not given
8 b (vii)	Decreases	1	

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.