JUNIOR LYCEUM ANNUAL EXAMINATIONS 2011

Directorate for Quality and Standards in Education

Educational Assessment Unit

FORM 4 PHYSICS MARKING SCHEME

SECTION A			40 MARKS
Question	**Answer**	**Marks**	**Additional Guidelines**
1 a)	Repulsion	**1**	
	Attraction	**1**	
	Attraction	**1**	
1 b)	Positive	**1**	
1 c) (i)	By rubbing it with a cloth.	**2**	1 mark for 'rubbing / friction'
1 c) (ii)	Electrons transferred from perpex to cloth.	**2**	
2 a)	0 kgm/s	**1**	
2 b)	90 kgm/s	**2**	Deduct 1 mark for missing or incorrect unit.
2 c)	-1.8 m/s	**2**	Deduct 1 mark for missing or incorrect unit. Accept –ve sign in front of value
2 d)	Total momentum before collisions equals to total momentum after collision provided no external force acts on the system	**1**	
2 e)	Because he has a greater mass.	**1**	Accept 'acceleration and mass are inversely proportional'
2 f)	Yes	**1**	
3 a)	Rays drawn correctly.	**2**	1 mark for each ray including arrows. If both arrows are missing deduce 1 mark
3 b)	Correct position of F.	**1**	
3 c)	Projector	**1**	
3 d)	2 ± 0.1	**1**	
3 e)	Real or magnified	**1**	
3 f)	Image becomes larger.	**1**	Accept 'image becomes blurred'
3 g)	Image becomes virtual, / upright.	**1**	Accept 'image disappears'
4 a)	20 Hz – 20 000 Hz	**1**	
4 b)	By means of compressions and rarefactions of air particles.	**1**	Do not accept 'by air particles' only. Accept 'by vibrations of air particles'
4 c)	Longitudinal	**1**	
4 d) (i)	Number of waves per second.	**1**	
4 d) (ii)	34 000 Hz	**1**	
4 d) (iii)	0.01 m	**1**	
4 e) (i)	Echo	**1**	
4 e) (ii)	27.2 m	**1**	Accept '27.2'
5 a)	Deceleration = 9 m/s^2 or ($a = -9\ m/s^2$)	**2**	Deduct 1 mark for missing or incorrect unit.
5 b)	-9000 N	**1**	Accept '9000N'
5 c)	42 m	**2**	Deduct 1 mark for missing or incorrect unit
5 d) (i)	Increase	**1**	
5 d) (ii)	Less deceleration because of greater mass.	**2**	Accept 'acceleration and mass are inversely proportional'

SECTION B		45 MARKS	
6 a) (i)	Using a wooden bar, water waves are created Student measures the length of the tank using the metre rule Student measures the time taken for a wave to move from one end of the tank to the other end using the stopwatch Av speed = total distance / time taken	**1** **1** **1**	
6 a) (ii)	Waves travel at a slower speed in shallow water	**1**	
6 b) (i)	Correct drawing.	**2**	1 mark for keeping wavelength constant. 1 mark for correct shape of waves.
6 b) (ii)	Normal drawn correctly at 90^o to the wall Angle of incidence marked correctly Angle of reflection marked correctly	**1** **1** **1**	
6 c) (i)	Correct drawing	**2**	1 mark for drawing correct shape 1 mark for keeping wavelength constant
6 c) (ii)	Diffraction	**1**	
6 d) (i)	Diagram drawn correctly	**2**	1 mark for bending wave towards normal in glass, 1 mark for bending wave away from normal in air.
6 d) (ii)	Refraction	**1**	

7 a) (i)	0.5 A	**1**	
7 a) (ii)	6 V	**1**	
7 a) (iii)	3 V	**1**	
7 b) (i)	4 Ω	**1**	
7 b) (ii)	0.75 A	**1**	
7 b) (iii)	1.5 A	**1**	
7 c) (i)	Rheostat	**1**	Accept 'variable resistor'
	Voltmeter	**1**	Do not accept 'voltage meter'
	Ammeter	**1**	Do not accept 'current meter'
7 c) (ii)	Appropriate graph	**4**	1 mark for correct labelling of axes 1 mark for graph title 1 mark for correct plotting of graph including straight line drawn 1 mark for correct size of graph
7 c) (iii)	0.56 ± 0.1 Ω	**2**	1 mark for correct reading 1 mark for correct answer value

8 a) (i)	Constant velocity / speed	**1**	
8 a) (ii)	Decelerates	**1**	Accept 'reduce speed'
8 b)	Distance covered by the car	**1**	
8 c)	0 m/s^2	**1**	
8 d) (i)	12 m	**2**	Deduct 1 mark for missing or incorrect unit
8 d) (ii)	40 m	**2**	Deduct 1 mark for missing or incorrect unit
8 d) (iii)	52 m	**1**	
8 d) (iv)	5 m/s^2	**2**	Deduct 1 mark for missing or incorrect unit
8 e) (i)	Braking	**1**	
8 e) (ii)	Thinking	**1**	
8 e) (iii)	Thinking & braking	**1**	
8 e) (iv)	Braking	**1**	