Independent Schools Examinations Board

COMMON ENTRANCE EXAMINATION AT 13+

SCIENCE

PHYSICS

MARK SCHEME

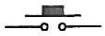
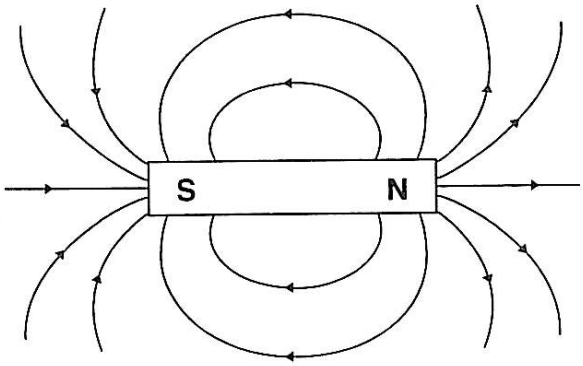
This is a suggested, not a prescriptive, mark scheme.

Wednesday 26 January 2011

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Although candidates should be encouraged to show their working clearly, full marks should be awarded for the correct answer to numerical questions even if the working is not shown.

Q.	Answer	Mark	Additional Guidance
1. (a)	joule	8	
(b)	cell		
(c)			
(d)	1 kg		
(e)	250 Hz		
(f)	when the Moon is between the Earth and the Sun		
(g)	luminous		
(h)	wave		
2. (a) (i)	so that it could rotate easily/to reduce friction	1	
(ii)	it would point towards the north	1	
(b)		3	2 marks for shape 1 mark for direction
(c)	strong	1	
(d) (i)	*e.g.:* moving cars in a scrap yard	1	
(ii)	can be turned off to drop the load	1	

Q.	Answer	Mark	Additional Guidance
3. (a)	smooth/streamlined/low friction	1	any one of these
(b) (i)	600 N/newtons	2	
(ii)	2 × 200 × 10 = 4000	2	ignore unit
(iii)	pressure = force ÷ area	1	
(iv)	600 ÷ 4000 = 0.15 N/cm^2	2	allow ecf from (i) and (ii)
(c) (i)	pressure increases	1	
(ii)	surface area is (much) smaller force is the same/only slightly smaller	2	
4. (a)	its speed changes (as it enters and leaves the glass)	1	accept 'speeds up' or 'slows down'
(b) (i)	dispersion	1	
(ii)	spectrum	1	do not accept 'rainbow'
5. (a)	*any two sensible suggestions, e.g:* size and type of car size of angle distance incline of ramp	2	
(b)	*a neat, accurate drawing of bars, drawn with ruler*	2	
(c)	divide distance by time	1	
(d)	uses time of 2.5 s to calculate speed of 0.8 m/s	2	
(e) (i)	weight/gravitational pull	1	accept 'gravity'
(ii)	friction	1	do not accept 'air resistance'

Q.	Answer	Mark	Additional Guidance
6. (a)	0.2 A *or* 'the same'	1	
(b)	incomplete/broken circuit	1	
(c)	*correct symbols used* *motor and lamp in parallel* *switch in each parallel branch*	3	
(d) (i)	on on off	2	1 mark if two only correct
(ii)	truth table	1	
(e)	electrical sound/thermal/internal/heat	2	
7. (a) (i)	*sensible scales on both axes*	1	
(ii)	*5 points plotted to within ½ square*	2	
(iii)	*smooth, good-fit curve*	2	
(b)	as the distance between the ball and lamp increases, the shadow gets smaller the change becomes more gradual at greater distances	2	accept the converse award 2 marks only if candidate indicates that the effect is less pronounced at a greater distance
8. (a) (i)	amplitude of the second sound is larger	1	accept the converse
(ii)	they are the same	1	
(b) (i)	after	1	
(ii)	because sound travels (much) more slowly than light	1	
Total		**60**	