

British Physics Olympiad Paper 1: Solutions

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Mark Scheme

Sept/Oct 2009

Allow ecf where this gives sensible answers

Q1.

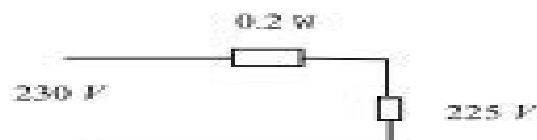
- (a) The mass is simply the sum of the two individual masses
i.e. 97 kg

✓
✓

(2 marks)

(b)

- i) Diagram of the form:



✓

- ii) 5 V drop across 0.2 W resistor
leads to a current of 25 A maximum
So power available at 225 V is 5.63 kW

✓
✓
✓

(4 marks)

(c)

- i) Sound energy = $0.1 \times mgh = 0.1 \times 2 \times 10^{-2} \times 9.8 \times 1$
= 2×10^{-4} J

✓

- ii) Assume (maybe implicit) - Energy is spread over half of a sphere
Or allow for whole sphere and energy absorbed by ground
But some comment should be made about the assumption

✓

$$\text{Ear receives energy} = 2 \times 10^{-4} \times \frac{\pi(6 \times 10^{-3})^2}{4} \bigg/ \frac{1}{2} 4\pi 5^2$$

$$= 3.6 \times 10^{-11} \text{ J}$$

✓

✓

(4 marks)

- (d) An image is formed on the screen (✓) and your eye now focuses rays of light which come from each point on the screen to form a new image. A mirror would direct rays from the room to your eye from other parts of the room. (✓)

(2 marks)

International Physics Olympiad Question Paper With Solution

**Swee Cheng Lim, Choy Heng Lai, Leong-
chuan Kwek**



International Physics Olympiad Question Paper With Solution:

International Physics Olympiads Waldemar Gorzkowski, 1990-04-01 This volume is the first international collection of the best physics problems both theoretical and experimental given at the national physics competitions for high school students in different countries The book introduces the short history of the International Physics Olympiad the Statutes the Syllabus the statistical data including complete list of winners and a collection of national reports Each of the national report will contains as a main part the best theoretical and experimental problems with complete solutions given at the national competition or at the training of the team before the international competition Taking into account that at present the International Physics Olympiad involves about 35 countries we are sure that the book will be interesting for everybody involved with physics education not only with the physics olympiads

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