

Chapter 13 Work and energy. (Revision Questions page 372). Multiple Choice Answers

Q	Ans	Explanation
1	D	The main energy transformation is from electrical energy to gravitational potential energy – but that is not an option. The next best is electrical to thermal. Note that electrical to kinetic is not correct as the kinetic energy remains constant during the journey.
2	A	<p>Missing graphs:</p> <p>Answer: Graph A. Assuming the object is on a horizontal surface and no potential energy changes come into the situation, all work will appear as kinetic energy, so they are directly proportional.</p>
3	D	The formula $W = Fs$ shows this
4		R has units kg s^{-1} , so $R = \frac{m}{t}$ $P = \frac{W}{t} = \frac{mgh}{t} = \frac{m}{t} \times gh = Rgh$ $P = Rgh$
5	B	E_{K1} (first time) $= \frac{1}{2}mv^2$ $W_1 = Fs_1 = E_{K1}$ because work = KE First stopping distance $s_1 = \frac{W}{F} = \frac{E_{K1}}{F}$ $v_2 = 2v_1$ E_{K2} (second time) $= \frac{1}{2}m(v_2)^2 = \frac{1}{2}m(2v_1)^2 = 4 \times \left(\frac{1}{2}mv^2\right) = 4 \times E_{K1}$ $W_2 = Fs_2 = E_{K2}$ because work = KE First stopping distance $s_1 = \frac{W_1}{F} = \frac{E_{K1}}{F}$ Second stopping distance $s_2 = \frac{W_2}{F} = \frac{E_{K2}}{F} = \frac{4E_{K1}}{F} = 4s_1$

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