

Question Number	Answer	Mark
14(a)	<p>Use $E_K = \frac{1}{2} m v^2$ (1)</p> <p>Use of efficiency = $\frac{\text{useful energy output}}{\text{total energy input}}$ (1)</p> <p>Efficiency = 0.56 Or 56% (1)</p> <p><u>Example of calculation</u></p> <p>$E_K = 0.5 \times 1\,560 \text{ kg} \times (13 \text{ m s}^{-1})^2 = 1.32 \times 10^5 \text{ J}$</p> <p>efficiency = $73.9 \times 10^4 \text{ J} \div 1.32 \times 10^5 \text{ J} = 0.56$</p>	3
14(b)(i)	As the velocity increases the drag forces increase. (1)	1
14(b)(ii)	<p>At higher speeds more work done against air resistance. (1)</p> <p>So more energy dissipated. (1)</p> <p>So a smaller proportion of energy is available to charge battery. (1)</p> <p>(Hence) the efficiency of the system is lower. (1)</p>	4
Total for question 14		8