

Question Number	Answer	Mark
11(a)	<p>The (vector) sum of all forces (acting on an object)</p> <p>Or</p> <p>The single force that would have the same effect as all the other forces acting together (1)</p> <p>[Treat “net force” as synonym for “resultant force”, so no mark]</p>	1
11(b)	<p>Use of $F = m a$ [allow 3.1 kN or 5.5 kN (0.41 or 0.73 (m s⁻²) respectively)] (1)</p> <p>$a = 3.2 \times 10^{-1} \text{ m s}^{-2}$ (1)</p> <p><u>Example of calculation</u></p> <p>$(5.5 - 3.1) \times 10^3 \text{ N} = 7.5 \times 10^3 \text{ kg} \times a$</p> <p>$a = 2.4 \times 10^3 \text{ N} \div 7.5 \times 10^3 \text{ kg} = 0.32 \text{ m s}^{-2}$</p>	2
11(c)	<p>Use of $P = W/t$ and $\Delta W = F \Delta x$ [allow $P = F v$] (1)</p> <p>[allow 2.4 kN or 3.1 kN (1.2×10^4 or 1.5×10^4 (W) respectively)] (1)</p> <p>$P = 2.6 \times 10^4 \text{ W}$ [or J s⁻¹]</p> <p><u>Example of calculation</u></p> <p>$P = W/t = F \Delta x / t = F v$</p> <p>$= 5.5 \times 10^3 \text{ N} \times 4.8 \text{ m s}^{-1} = 2.64 \times 10^4 \text{ W}$</p>	2
Total for question 11		5