4 **(a)** Distinguish between gravitational potential energy and elastic potential energy.

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.....

.....[2]

(b) A ball of mass 65 g is thrown vertically upwards from ground level with a speed of $16\,m\,s^{-1}$. Air resistance is negligible.

(i) Calculate, for the ball,

1. the initial kinetic energy,

kinetic energy = ... J [2]

2. the maximum height reached.

maximum height = ... m [2]

(ii) The ball takes time t to reach maximum height. For time $\frac{t}{2}$ after the ball has been thrown, calculate the ratio

$$\frac{\text{potential energy of ball}}{\text{kinetic energy of ball}}.$$

ratio = ... [3]

(iii) State and explain the effect of air resistance on the time taken for the ball to reach maximum height.

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.....[1]