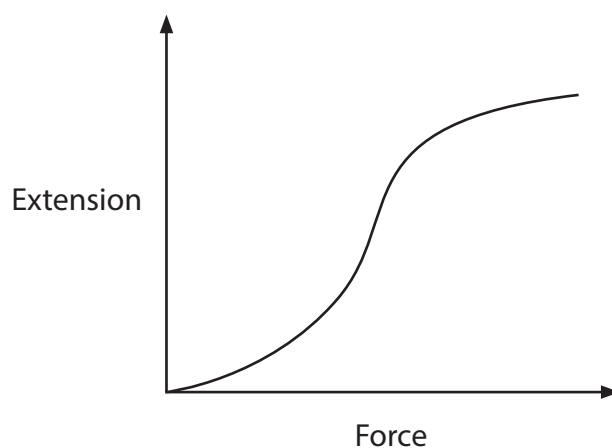


4 (a) (i) State Hooke's Law.

(2)

(ii) The graph shows how the extension of a rubber band varies with the force applied.

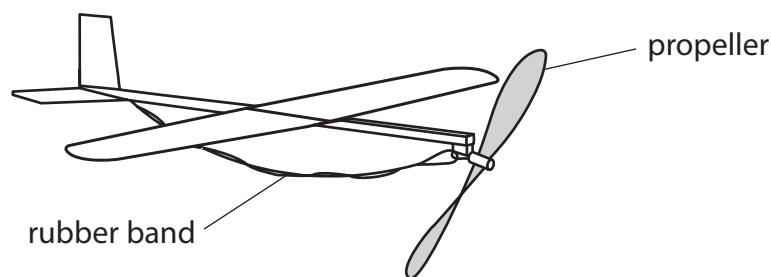


Explain how the graph shows that the rubber band does not obey Hooke's Law.

(2)



(b) Diagram 1 shows a model aeroplane powered by a rubber band.



**Diagram 1**

A person rotates the propeller of the model aeroplane, which twists the rubber band.

He then releases the propeller and it spins.

Energy transfer occurs during this process.

The box lists words associated with energy.

kinetic	gravitational	electrostatic
mechanical	elastic	magnetic
heating	chemical	radiation

Use words from the box to complete the passage.

(3)

The person does ..... work to twist the rubber band.

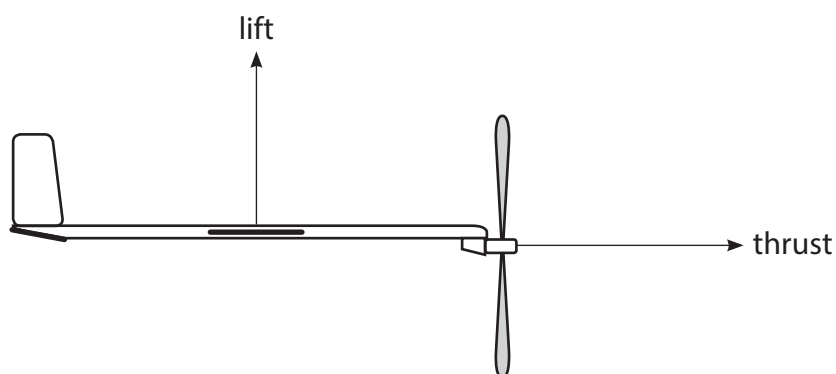
As the person twists the rubber band it extends, increasing the .....

energy store of the rubber band. When the rubber band is released it does mechanical work,

increasing the ..... energy store of the propeller.



(c) Diagram 2 shows the aeroplane flying horizontally to the right.



**Diagram 2**

The aeroplane flies at a constant speed.

Diagram 2 shows two forces acting on the aeroplane.

Draw labelled arrows on diagram 2 to show two more forces acting on the aeroplane.  
(4)

**(Total for Question 4 = 11 marks)**

