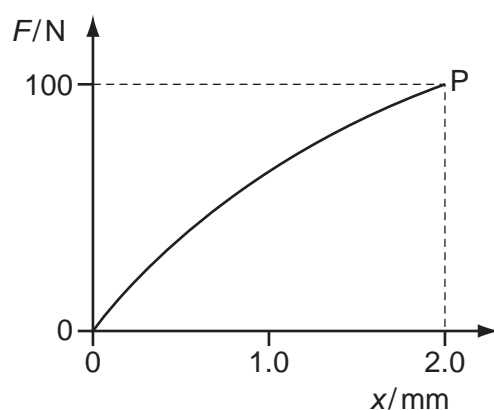


- 21 The graph shows the non-linear force-extension curve for a wire made from a new material.



What could be the value of the strain energy stored in the wire when it is stretched to point P?

- A** 0.09 J      **B** 0.10 J      **C** 0.11 J      **D** 0.20 J
- 22 A steel string on an electric guitar has the following properties.

$$\text{diameter} = 5.0 \times 10^{-4} \text{ m}$$

$$\text{Young modulus} = 2.0 \times 10^{11} \text{ Pa}$$

$$\text{tension} = 20 \text{ N}$$

The string snaps, and contracts elastically.

By what percentage does a length  $l$  of a piece of the string contract?

- A**  $5.1 \times 10^{-4} \%$       **B**  $5.1 \times 10^{-2} \%$       **C**  $1.3 \times 10^{-4} \%$       **D**  $1.3 \times 10^{-2} \%$

**Space for working**