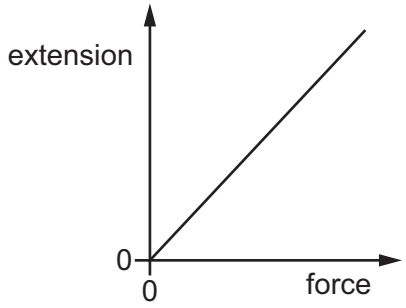
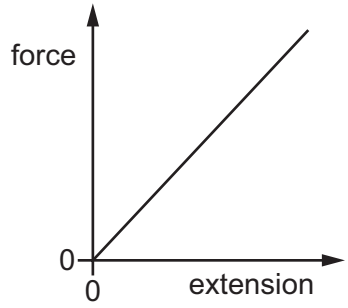
22 An experiment is carried out using a metal wire to investigate how it responds to a varying tensile force. The cross-sectional area of the wire is constant.

Which graph has a gradient that is equal to the Young modulus of the metal?

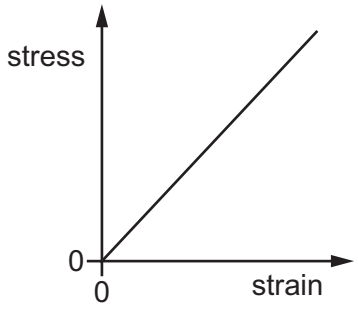
A



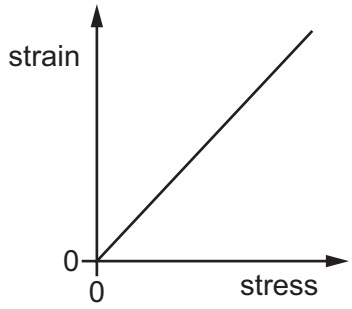
B



C



D



23 For a wire, Hooke's law is obeyed for a tension F and extension x. The Young modulus for the material of the wire is E.

Which expression represents the elastic potential energy stored in the wire?

A $\frac{1}{2}Ex$ **B** Ex **C** $\frac{1}{2}Fx$ **D** Fx

24 A plane polarised wave has amplitude A. The wave is incident normally on a polarising filter.

The transmission axis of the filter is at angle θ to the plane of polarisation of the incident wave.

What is the amplitude of the wave that emerges from the filter?

A $A\cos\theta$ **B** $A\cos^2\theta$ **C** $A^2\cos\theta$ **D** $A^2\cos^2\theta$