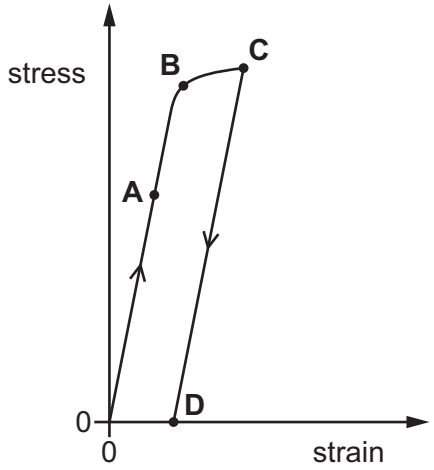
20 A tensile force is used to extend a sample of a material. The force is then removed.

The variation with strain of the applied stress is shown on the graph.

Which point on the graph could represent the elastic limit for the material?



21 A tensile force is applied to an unstretched rubber band, causing it to stretch. The tensile force is then removed.

Which statement about the rubber band **must** be correct?

A If the rubber band stretches elastically and plastically, all the work done by the force is converted to thermal energy in the rubber.

B If the rubber band stretches elastically, it obeys Hooke's law.

C If the rubber band stretches elastically, the gradient of the force–extension graph represents the work done by the force.

D If the rubber band stretches plastically, the rubber band will be longer after the force is removed than it was before the force is applied.

22 A sound wave reduces in intensity but maintains a constant frequency as it travels through air.

Which statement is correct?

A The maximum displacement of the particles changes between one particle and the next particle.

B The phase difference between adjacent particles is zero.

C The wavelength is the distance between two particles that have a phase difference of 180°.

D Two particles that have a phase difference of 360° have the same maximum displacement.