

AS Level Physics A
H156/02 Depth in physics

Question Set 17

1 (a)*

A student is investigating the stretching of materials.
 The student applies varying loads to material **J** and determines the stress and the strain until the material breaks.
 The experiment is then repeated for a second material **K**.
 Fig. 2.1 shows how the stress for each material varies with strain.

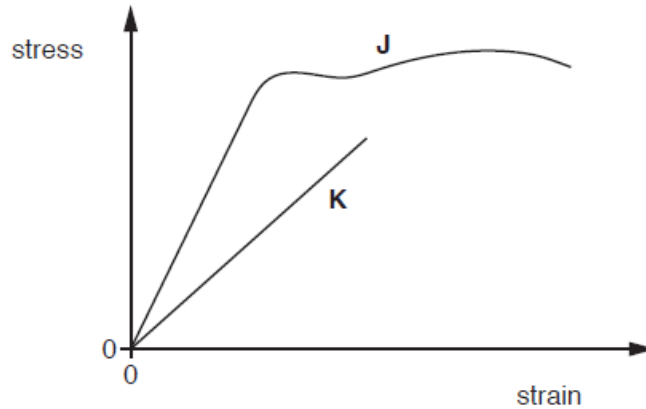


Fig. 2.1

Compare materials **J** and **K** using Fig. 2.1 and the six terms listed below.

brittle

ductile

elastic

plastic

ultimate tensile strength

Young modulus

Include in your answer an explanation of each term.

[6]

(b)

A student is designing a three-legged wooden stool as shown in Fig. 2.2.

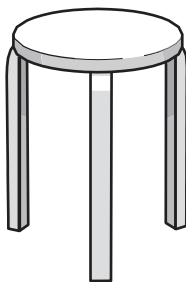


Fig. 2.2

The stool must be able to support the weight of an adult.
 The maximum compressive stress of the wood is 2.3MPa.

Estimate the minimum cross-sectional area A of **one** leg.

$A =$

m^2

[3]

Total Marks for Question Set 17: 9

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