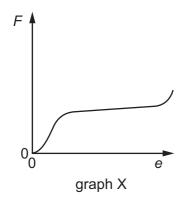
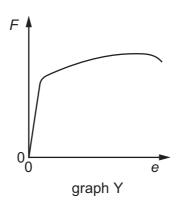
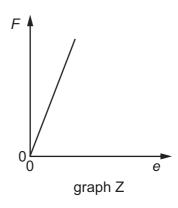
21 Cylindrical samples of steel, glass and rubber are each subjected to a gradually increasing tensile force *F*. The extensions *e* are measured and graphs are plotted as shown below.







Which row correctly relates the graphs to the materials?

	steel	glass	rubber
Α	Х	Y	Z
В	Х	Z	Υ
С	Υ	Х	Z
D	Υ	Z	X

22 Two steel wires P and Q have lengths l and 2l respectively, and cross-sectional areas A and $\frac{A}{2}$ respectively. Both wires obey Hooke's law.

What is the ratio $\frac{\text{tension in P}}{\text{tension in Q}}$ when both wires are stretched to the same extension?

- **A** $\frac{1}{4}$
- **B** $\frac{1}{2}$
- $c = \frac{2}{1}$
- D $\frac{4}{1}$
- 23 What do **not** travel at the speed of light in a vacuum?
 - A electrons
 - **B** microwaves
 - C radio waves
 - **D** X-rays
- 24 The number of wavelengths of visible light in one metre is of the order of
 - **A** 10⁴.
- **B** 10⁶.
- **C** 10⁸.
- **D** 10¹⁰