21 In an experiment to demonstrate Brownian motion, a transparent container is filled with smoke particles suspended in air.

What can be seen when the contents of the container are strongly illuminated and viewed through a microscope?

A molecules in random motion

B molecules vibrating regularly

C smoke particles in random motion

D smoke particles vibrating regularly

22 A lift is supported by two steel cables each of length 20 m.

Each of the cables consists of 100 parallel steel wires, each wire of cross-sectional area $3.2 \times 10^{-6}\,m^2$. The Young modulus of steel is $2.1 \times 10^{11}\,N\,m^{-2}$.

Which distance does the lift move downward when a man of mass 70 kg steps into it?

A 0.010 mm **B** 0.020 mm **C** 0.10 mm **D** 0.20 mm

23 What is equal to the Young modulus of a material that is extended elastically within the limit of proportionality?

A area under the force-extension graph

B area under the stress-strain graph

C gradient of the force-extension graph

D gradient of the stress-strain graph

Space for working