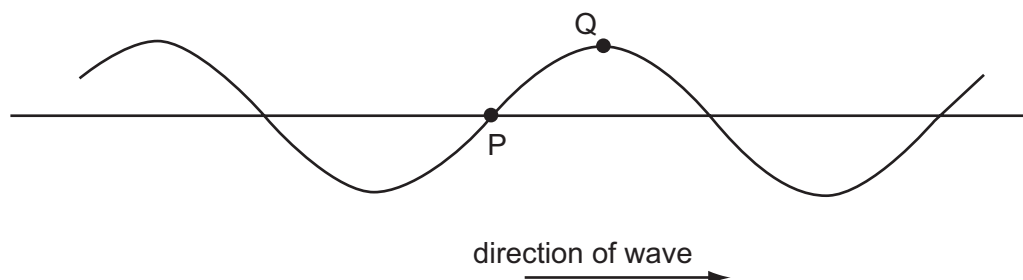


- 25 The diagram shows a transverse wave on a rope. The wave is travelling from left to right.

At the instant shown, the points P and Q on the rope have zero displacement and maximum displacement respectively.



Which of the following describes the direction of motion, if any, of the points P and Q at this instant?

	point P	point Q
A	downwards	stationary
B	stationary	downwards
C	stationary	upwards
D	upwards	stationary

- 26 A plane wave of amplitude A is incident on a surface of area S placed so that it is perpendicular to the direction of travel of the wave. The energy per unit time reaching the surface is E .

The amplitude of the wave is increased to $2A$ and the area of the surface is reduced to $\frac{1}{2}S$.

How much energy per unit time reaches this smaller surface?

- A** $4E$ **B** $2E$ **C** E **D** $\frac{1}{2}E$

- 27 What is the approximate range of frequencies of infra-red radiation?

- A** $1 \times 10^3 \text{ Hz}$ to $1 \times 10^9 \text{ Hz}$
B $1 \times 10^9 \text{ Hz}$ to $1 \times 10^{11} \text{ Hz}$
C $1 \times 10^{11} \text{ Hz}$ to $1 \times 10^{14} \text{ Hz}$
D $1 \times 10^{14} \text{ Hz}$ to $1 \times 10^{17} \text{ Hz}$

- 28 The lines of a diffraction grating have a spacing of $1.6 \times 10^{-6} \text{ m}$. A beam of light is incident normally on the grating. The first order maximum makes an angle of 20° with the undeviated beam.

What is the wavelength of the incident light?

- A** 210 nm **B** 270 nm **C** 420 nm **D** 550 nm