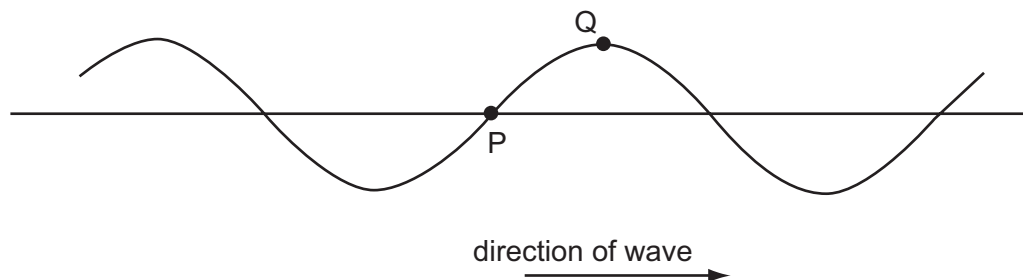


- 25 The diagram shows a transverse wave on a rope. The wave is travelling from left to right.

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
<b>A</b>	downwards	stationary
<b>B</b>	stationary	downwards
<b>C</b>	stationary	upwards
<b>D</b>	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  $20^\circ$  with the undeviated beam.

What is the wavelength of the incident light?

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