

- 28 A beam of light with power P has an area of cross-section A .

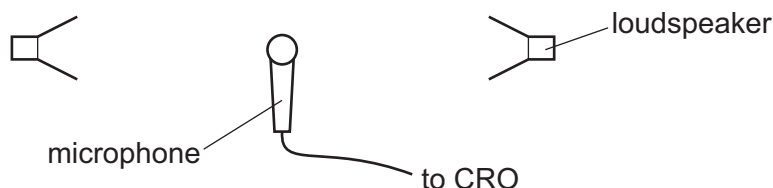
The amplitude of the light waves in the beam is X .

The beam of light is then changed to one with the same frequency but with an increased amplitude of $4X$ and an area of cross-section reduced to $\frac{A}{3}$.

What is the power of the new beam?

- A** $1.3P$ **B** $5.3P$ **C** $12P$ **D** $48P$

- 29 Two loudspeakers are connected to the same signal generator. The signal generator produces a single frequency. The loudspeakers face each other so that a stationary sound wave is set up in the region between the loudspeakers.



A microphone is connected to a cathode-ray oscilloscope (CRO) and positioned between the two loudspeakers.

The microphone is moved along a line joining the two loudspeakers.

The signal on the CRO shows 5 maximum amplitudes as the microphone moves. The microphone moves a distance of 2.0 m from the position that gives the first maximum to the position that gives the fifth maximum.

What is the wavelength of the sound wave?

- A** 0.40 m **B** 0.50 m **C** 0.80 m **D** 1.0 m

- 30 Two wave sources emit coherent waves.

Which condition **must** be correct for the coherent waves?

- A** The waves are emitted in phase.
B The waves are emitted and move in opposite directions.
C The waves are emitted with a constant phase difference.
D The waves are emitted with the same amplitude.