

- 22 The period of an electromagnetic wave is 1.0 ns.

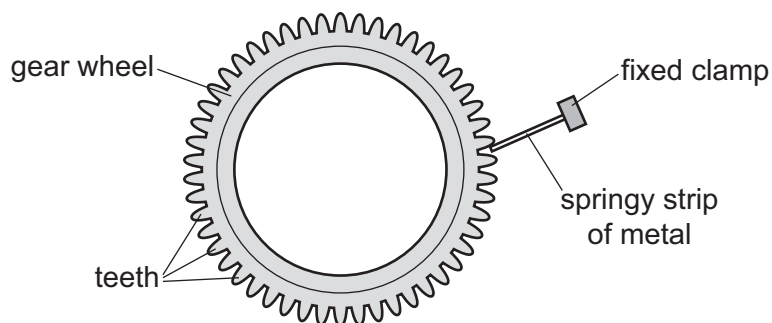
What are the frequency and wavelength of the wave?

	frequency / Hz	wavelength / m
<b>A</b>	1.0	$3.0 \times 10^8$
<b>B</b>	$1.0 \times 10^6$	300
<b>C</b>	$1.0 \times 10^9$	0.30
<b>D</b>	$1.0 \times 10^{12}$	$3.0 \times 10^{-4}$

- 23 Which statement about progressive longitudinal waves is **not** correct?

- A** The oscillations of the particles are parallel to the direction of travel of the wave energy.
- B** They have a series of nodes and antinodes.
- C** They need a medium through which to travel.
- D** They transfer energy.

- 24 A bicycle gear wheel is a disc with 50 'teeth' equally spaced around its edge, as shown. The gear wheel is rotated 10 times each second. A springy strip of metal is vibrated by the rotating 'teeth'. The metal strip produces a sound of frequency that is equal to the frequency of vibration of the strip.



The speed of sound in air is  $330 \text{ m s}^{-1}$ .

What is the wavelength of the emitted sound?

- A** 0.66 m      **B** 1.5 m      **C** 6.6 m      **D** 500 m