

- 25 An electromagnetic wave is travelling through a vacuum.

What could be the wavelength and period of the electromagnetic wave?

	wavelength	period
A	$1.2 \times 10^{-10} \text{ Tm}$	2.5 Ms
B	1.2 pm	$2.5 \times 10^{11} \text{ Gs}$
C	$1.2 \times 10^2 \text{ pm}$	$4.0 \times 10^{-10} \text{ ns}$
D	$1.2 \times 10^3 \mu\text{m}$	4.0 ns

- 26 Light of frequency $6.7 \times 10^{14} \text{ Hz}$ in a vacuum is incident normally on a diffraction grating that contains $4.0 \times 10^5 \text{ lines m}^{-1}$.

What is the angle between the adjacent second and third order intensity maxima?

- A** 12° **B** 21° **C** 33° **D** 54°

- 27 The siren of a moving police car emits a sound wave with a frequency of 440 Hz. A stationary observer hears sound of frequency 494 Hz. The speed of sound in the air is 340 m s^{-1} .

What could be the speed and the direction of movement of the car?

- A** 37 m s^{-1} directly away from the observer
B 37 m s^{-1} directly towards the observer
C 42 m s^{-1} directly away from the observer
D 42 m s^{-1} directly towards the observer

- 28 The diagram shows the shape at one instant in time of part of a stretched string as a wave travels along it from left to right.



What are the directions of the velocities of the points 1, 2 and 3 on the string at this instant in time?

	point 1	point 2	point 3
A	→	→	→
B	→	←	→
C	↑	↓	↑
D	↓	↑	↓