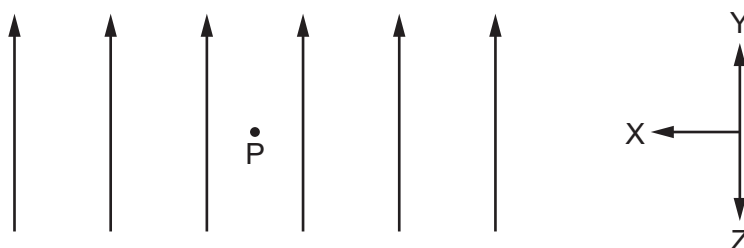


- 28** In a two-source interference experiment, light of a single frequency is incident on a double slit.

The light waves emerging from the slits are coherent.

What is meant by *coherent*?

- A** The waves are in phase.
 - B** The waves have a constant phase difference.
 - C** The waves have the same amplitude.
 - D** The waves interfere constructively wherever they overlap.
- 29** A parallel beam of light consists of light of wavelength 420 nm and light of wavelength 630 nm.
- The light is incident normally on a diffraction grating.
- The diffraction maxima for the two wavelengths overlap only at an angle of 31° from the direction of the incident light beam.
- What could be the line spacing of the diffraction grating?
- A** $1.2\ \mu\text{m}$
 - B** $1.6\ \mu\text{m}$
 - C** $2.4\ \mu\text{m}$
 - D** $3.7\ \mu\text{m}$
- 30** A positively charged particle P is in an electric field, as shown.



The field lines (lines of force) are evenly spaced and parallel.

Which statement is correct?

- A** Moving P a small distance in any direction will not change the electric force on P.
- B** Moving P a small distance in direction Y will increase the electric force on P.
- C** Moving P a small distance in direction Z will increase the electric force on P.
- D** Moving P a small distance in direction X will increase the electric force on P.