

23 Which electromagnetic waves have the wavelengths of  $10^{-2}$  m,  $10^{-5}$  m,  $10^{-10}$  m and  $10^{-13}$  m?

	$10^{-2}$ m	$10^{-5}$ m	$10^{-10}$ m	$10^{-13}$ m
A	infra-red	microwaves	visible light	X-rays
B	microwaves	infra-red	X-rays	gamma rays
C	microwaves	visible light	ultraviolet	gamma rays
D	radio waves	microwaves	ultraviolet	X-rays

24 Which statement concerning a stationary wave is correct?

- A All the particles between two successive nodes oscillate in phase.
- B The amplitude of the stationary wave is equal to the amplitude of one of the waves creating it.
- C The wavelength of the stationary wave is equal to the separation of two adjacent nodes.
- D There is no displacement of a particle at an antinode at any time.

25 Continuous water waves are diffracted through a gap in a barrier in a ripple tank.

Which change will cause the diffraction of the waves to increase?

- A increasing the frequency of the waves
- B increasing the width of the gap
- C reducing the wavelength of the waves
- D reducing the width of the gap

26 A parallel beam of light of wavelength 450 nm is incident normally on a diffraction grating which has 300 lines/mm.

What is the total number of intensity maxima observed?

- A 7                      B 8                      C 14                      D 15

27 Fringes of separation  $x$  are observed on a screen 1.00 m from a double slit that is illuminated by yellow light of wavelength 600 nm.

At which distance from the slits would fringes of the same separation  $x$  be observed when using blue light of wavelength 400 nm?

- A 0.33 m              B 0.67 m              C 0.75 m              D 1.50 m