

P6: The wave model of radiation

1. If a cork is placed on the surface of a tank of water through which ripples propagate it will move

- A side to side at regular intervals
- B side to side at irregular intervals
- C up and down at regular intervals
- D up and down at irregular intervals
- E in circles

2. Which one of the following waves is not transverse?

- A radio
- B sound
- C infrared
- D light
- E gamma

3. Which one of the following changes occurs when light passes from air into glass?

- A its wavelength increases
- B its speed increases
- C its speed decreases
- D its frequency decreases
- E its frequency increases

4. Light can travel from one end of an optical fibre to another, even if the fibre is curved. This is due to

- A dispersion of the light
- B refraction of the light
- C the careful use of mirrors
- D total internal reflection
- E diffraction

5. When waves pass through an aperture they undergo

- A refraction
- B reflection
- C interference
- D diffraction
- E dispersion

6. An explosion emits light, sound and infra-red waves. Which waves will be received first by a distant observer?

- A infra-red and sound
- B all three
- C infra-red and light
- D light and sound
- E light

7. Which of the following responses places the electromagnetic waves in order of increasing frequency?

- A gamma, infra-red, X-ray
- B infra-red, X-ray, gamma
- C X-ray, gamma, infra-red
- D infra-red, gamma, X-ray
- E gamma, X-ray, infra-red

8. Which of the following examples of electromagnetic wave has the shortest wavelength?

- A radio
- B infra-red
- C ultraviolet
- D visible light
- E X-rays

9. Which of the following does not apply to sound waves?

- A they transmit energy
- B they result from vibrations
- C they are propagated by a series of compressions and rarefactions
- D they travel fastest in a vacuum
- E they can be diffracted

10. A loudspeaker consists of a cone which vibrates to and fro. If the cone vibrates with a larger amplitude, the sound will become

- A higher pitched
- B lower pitched
- C louder
- D quieter
- E modulated

11. A foghorn sits atop a lighthouse which is 825 m from a vertical cliff face. If it receives an echo 5s after sounding a short blast, the speed of sound in air is

- A 165 m/s
- B 330 m/s
- C 825 m/s
- D 4125 m/s
- E indeterminable

12. A sound wave of frequency 3 kHz is produced underwater, where sound travels at 1500 m/s. The wavelength is

- A 500 m
- B 4500 m
- C 0.5 m
- D 2m
- E 0.2 cm