

25 Which statement about electromagnetic waves is correct?

- A** A wave of wavelength $5.0 \times 10^{-6} \text{ m}$ is invisible to the human eye.
- B** They can all travel at different speeds in free space.
- C** They **cannot** be polarised.
- D** They consist of vibrating atoms.

A-Level Physics: **s25 11**

27 Which wavelength of electromagnetic radiation in free space could be green light?

- A** $4.9 \times 10^{-9} \text{ m}$ **B** $6.6 \times 10^{-9} \text{ m}$ **C** $5.5 \times 10^{-7} \text{ m}$ **D** $8.6 \times 10^{-7} \text{ m}$

A-Level Physics: **s25 12**

5 Radio waves can be used to measure the distance between Earth and the planet Jupiter.

A pulse of radio waves is emitted from the surface of Earth. The pulse reflects from the surface of Jupiter and is detected again on Earth.

The time between emitting and receiving the pulse is 3960 s.

What is the distance between Earth and Jupiter?

- A** $5.94 \times 10^8 \text{ km}$
- B** $1.19 \times 10^9 \text{ km}$
- C** $5.94 \times 10^{11} \text{ km}$
- D** $1.19 \times 10^{12} \text{ km}$

A-Level Physics: **s25 13**

27 An electromagnetic wave travelling in free space is **not** visible to the human eye.

What is a possible wavelength of the wave?

- A** $4.5 \times 10^{-10} \text{ km}$
- B** $6.2 \times 10^{-7} \text{ m}$
- C** $5.4 \times 10^{-6} \text{ cm}$
- D** $4.2 \times 10^{-4} \text{ mm}$

23 Which row could describe electromagnetic waves?

	type of wave	speed in free space
A	longitudinal	faster for shorter wavelengths
B	longitudinal	the same for all wavelengths
C	transverse	faster for shorter wavelengths
D	transverse	the same for all wavelengths

22 Which row correctly identifies the properties of all electromagnetic waves?

	transverse wave	longitudinal wave	can travel in free space
A	✓	✗	✓
B	✓	✗	✗
C	✗	✓	✓
D	✗	✓	✗

key

✓ = property of an electromagnetic wave

✗ = **not** a property of an electromagnetic wave

23 What is the approximate range of wavelengths in free space for infrared radiation?

- A** 100 nm to 400 nm
- B** 300 μm to 30 cm
- C** 400 nm to 700 nm
- D** 800 nm to 1000 μm