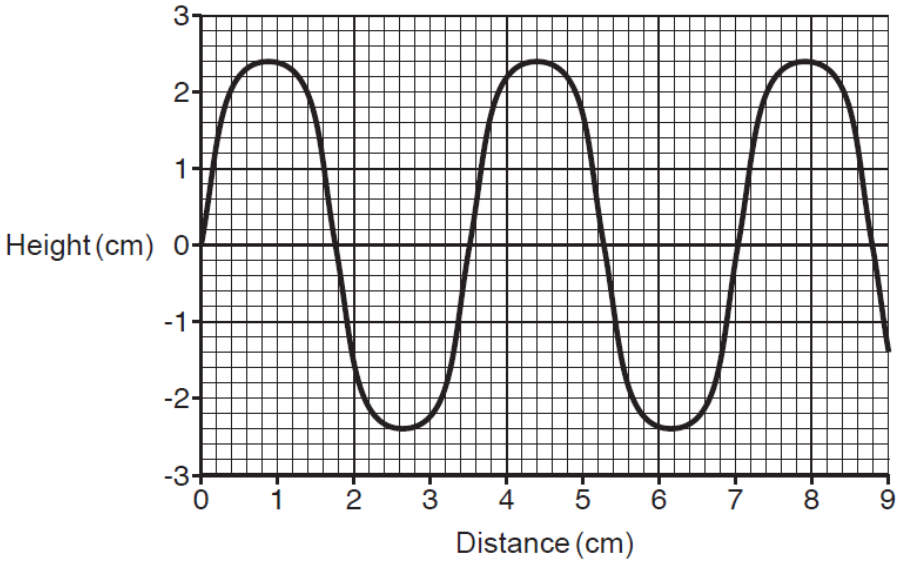
Oxford Cambridge and RSA

GCSE Physics A (Gateway)

J249/02 Physics A P5-P8 and P9 (Foundation Tier)

Question Set 1

1 Look at the diagram of a water wave.



(a) **(i)** What is the **wavelength** of this wave?

wavelength = 3.5 cm

[1]

(ii) What is the **amplitude** of this wave?

Amplitude = 2.4 cm

[1]

(iii) The wavelength of the wave is changed to 25 cm. Two waves are produced each second.

Use the equation: Wave speed = Frequency × Wavelength

Calculate the speed of the wave.

Freq = 2 Hz

$\lambda = 0.25\ m$

speed = F λ

speed = $2 \times 0.25 = 0.5\ m/s$

[2]

(b) Water waves are transverse and sound waves are longitudinal.

(i) Describe how water particles move in a **transverse** water wave..

The water particles move up and down at right angles to the direction of travel of the wave. **[1]**

(ii) Describe how water particles move in a **longitudinal** water wave..

The water particles move back and forth, parallel to the direction of travel of the wave. **[1]**

(c) Look at the diagram of the electromagnetic spectrum.

Radio	Microwave	Infra-red	Visible light	Ultra-violet	X-rays	Gamma-rays

(i) Name a wave that has a longer wavelength than red light.

Radio waves **[1]**

(ii) Name a wave that has a higher frequency than violet light.

X-Rays **[1]**

(iii) State two **uses** of gamma-rays. **[2]**

- Killing tumour/cancerous cells (Radiotherapy).
- Sterilisation and disinfection of equipment.

Total Marks for Question Set 1: 10

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