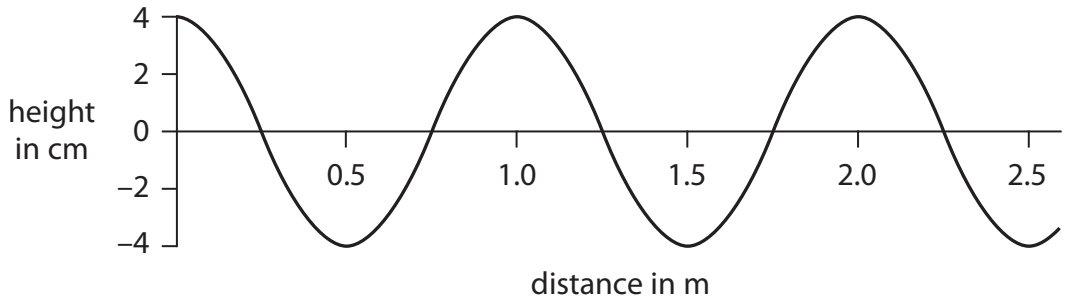
Answer ALL questions.

1 This question is about waves.

(a) The diagram represents a water wave at an instant in time.



(i) What is the wavelength of the water wave?

(1)

☒ **A** 0.5 m

☒ **B** 1.0 m

☒ **C** 1.5 m

☒ **D** 2.0 m

(ii) What is the amplitude of the water wave?

(1)

☒ **A** 1 cm

☒ **B** 2 cm

☒ **C** 4 cm

☒ **D** 8 cm

(b) Describe the differences between transverse and longitudinal waves.

You may draw a diagram to help your answer.

(3)

(c) All electromagnetic waves are transverse.

State two other properties that are the same for all electromagnetic waves.

(2)

1

2

(d) Some types of wave are used in hospitals.

(i) Which type of wave is used in radiotherapy to treat cancer?

(1)

☒ **A** gamma rays

☒ **B** infrared

☒ **C** microwave

☒ **D** radio waves

(ii) Endoscopes use optical fibres to see inside the body.

Which type of wave should be used in the optical fibres?

(1)

☒ **A** microwave

☒ **B** radio waves

☒ **C** ultraviolet

☒ **D** visible light

(iii) X-rays are used to obtain images of broken bones.

Explain why technicians leave the room before taking an x-ray of a patient.

(2)

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(Total for Question 1 = 11 marks)