

AQA - Electromagnetic waves – GCSE Physics

1. June/2020/Paper_2F/No.6

06.1

Figure 10 shows the position of three types of wave in the electromagnetic spectrum.

Figure 10

A	Microwaves	B	Visible light	C	D	Gamma rays
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Which letter represents the position of X-rays in the electromagnetic spectrum?

[1 mark]

Tick (✓) **one** box.

A B C D

A doctor needs to obtain an image of a bone in a patient's injured arm.

The doctor takes an X-ray of the arm.

06.2

Give **one** possible harmful consequence of receiving a dose of X-ray radiation.

[1 mark]

Table 3 gives information about two methods of bone imaging.

Table 3

Method	Radiation dose in millisieverts
X-ray of arm	0.1
CT scan of arm	6.0

0 6 . 3

Compare the risk of harm to the patient of having an X-ray rather than a CT scan.

[2 marks]

0 6 . 4 Which of the following is the same as 6.0 millisieverts?

[1 mark]

Tick (✓) **one** box.

0.60 sieverts

0.060 sieverts

0.0060 sieverts

0.00060 sieverts

0 6 . 5 The patient received a total radiation dose of 2.5 millisieverts during one year.

Calculate the percentage of this dose that came from one X-ray of the arm.

Use the data in **Table 3**.

[2 marks]

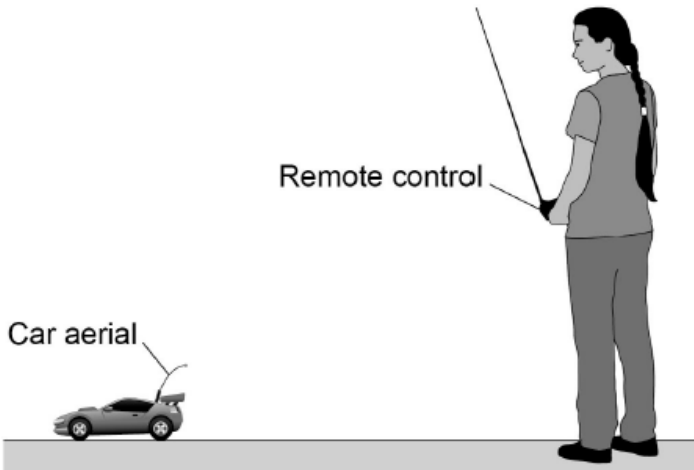
Percentage = _____ %

2. June/2020/Paper_2H/No.6(6.1_6.3)

0 6

Figure 8 shows a student playing with a remote-controlled car.

Figure 8



0 6 . 1

The remote control transmits radio waves to the car aerial.

The transmitted radio waves have a frequency of 320 MHz.

speed of radio waves = 3.0×10^8 m/s

Calculate the wavelength of the radio waves.

Give the unit.

[5 marks]

Wavelength = _____

Unit _____

0 6 . 2 The car aerial is connected to an electrical circuit in the car.

Describe what happens in the electrical circuit when the car aerial absorbs radio waves.

[2 marks]

0 6 . 3 The car produces sound waves.

Give **two** ways in which radio waves are different to sound waves.

[2 marks]

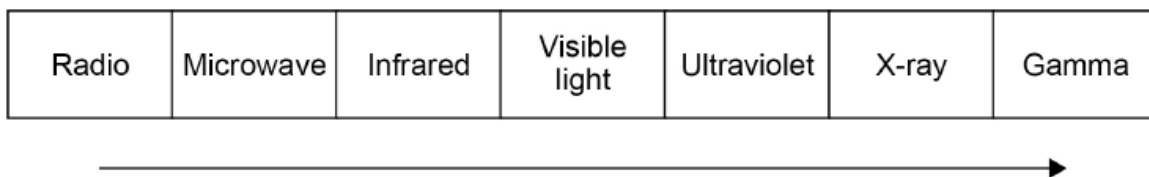
1 _____

2 _____

3. June/2019/Paper_2H/No.7(7.1_7.2)

0 7 . 1 Figure 12 shows the electromagnetic spectrum.

Figure 12



Which statement is correct for the direction of the arrow in Figure 12?

[1 mark]

Tick (✓) **one** box.

The wavelength decreases and the wave speed in air increases.

The frequency increases and the wavelength increases.

The frequency increases and the wave speed in air stays the same.

The wavelength increases and the wave speed in air increases.

0 7 . 2 Explain how the properties of X-rays make them suitable for the medical imaging of bones.

[2 marks]
