

**3** This question is about parts of the electromagnetic spectrum.

gamma rays	x-rays		visible light	infrared waves	microwaves	radio waves
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(a) Name the missing part of this spectrum.

(1)

(b) Which part of this spectrum has the shortest wavelength?

(1)

(c) Explain how the frequency of electromagnetic waves in free space differs with increasing wavelength.

(2)

(d) Microwaves are used to heat food.

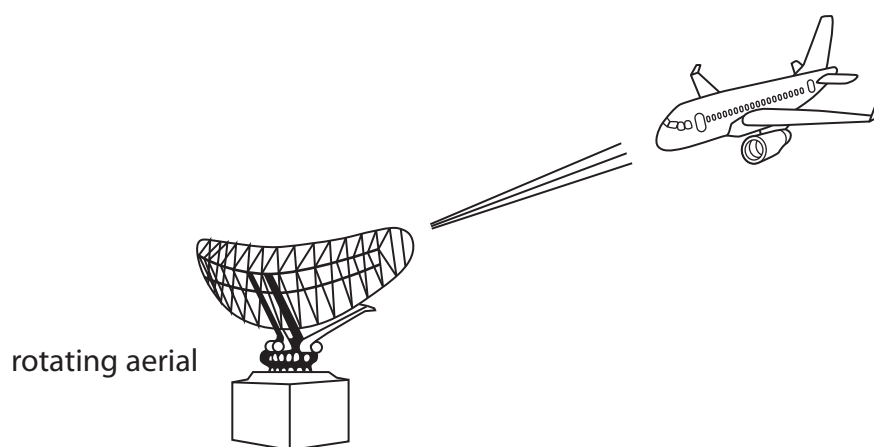
State another part of the spectrum that is used to heat food.

(1)



- (e) Microwaves are used at airports to detect aeroplanes.

A microwave beam is emitted from a large rotating aerial and reflected back off the metal surface of the aeroplane.



- (i) Explain how microwaves are used to find the distance to an aeroplane.

(3)

- (ii) Suggest why it is important for the aerial to rotate through a full circle every two seconds.

(1)

**(Total for Question 3 = 9 marks)**

