# Electromagnetic Spectrum – 2019 June

**1.** 0625/31/M/J/19/No.7

**(a)** Fig. 7.1 shows some devices that each use one type of electromagnetic radiation.

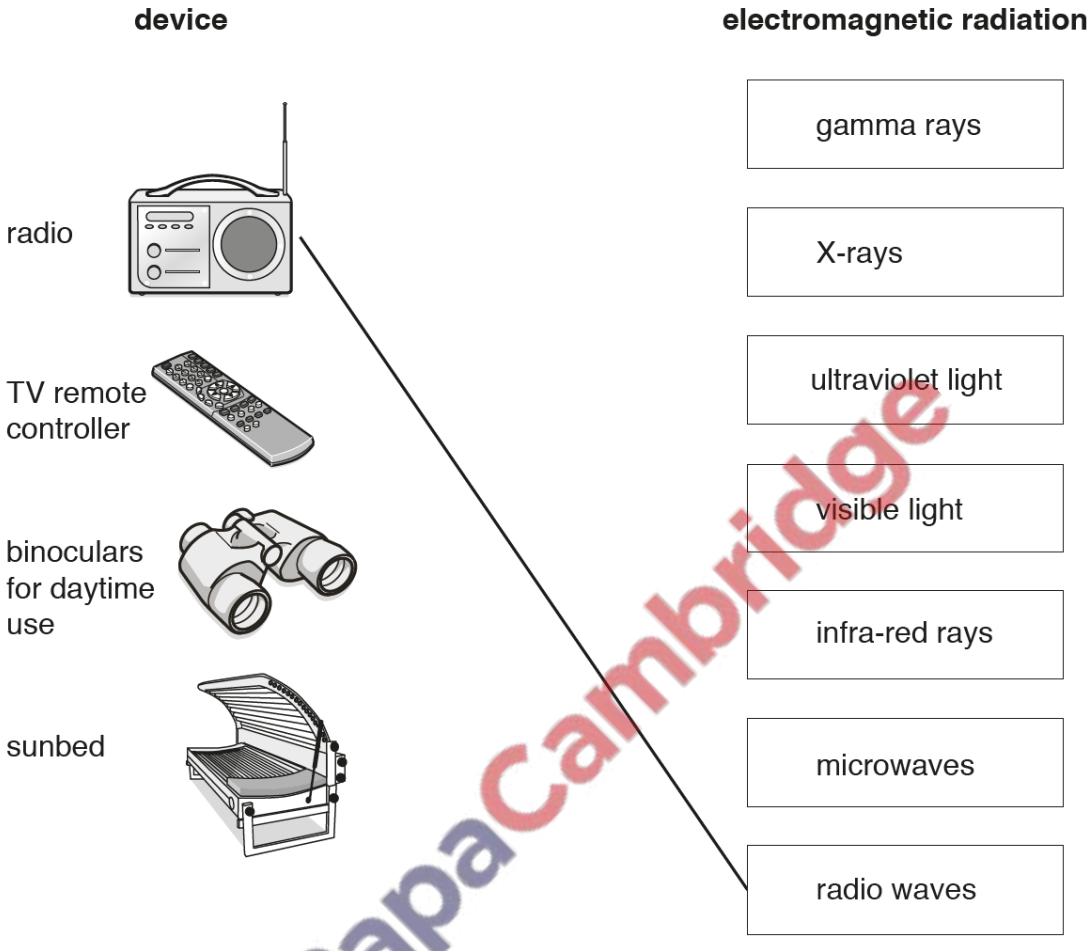


**Fig. 7.1**

Draw one line from each device to the correct type of electromagnetic radiation. One has been done for you. [3]

**(b)** **(i)** State the name of one type of radiation that has a longer wavelength than visible light.

..... [1]

**(ii)** Complete the sentence about electromagnetic radiation. Use a word from the box.

| amplitude | frequency | speed | wavelength |
|---|---|---|---|

All types of electromagnetic radiation travel through a vacuum with the same

..... [1]

[Total: 5]

**2.** 0625/33/M/J/19/No.7

Fig. 7.1 shows a ray of red light being reflected at the flat surface of a glass block.

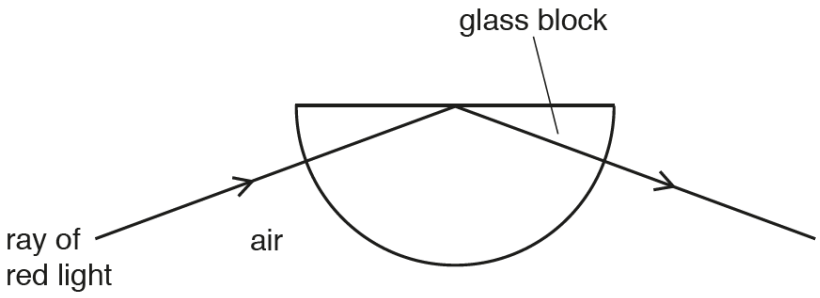


**Fig. 7.1**

**(a)** Explain why the ray of red light is totally internally reflected by the surface of the glass block.

.....

..... [1]

**(b)** A ray of white light passes through a prism and produces a spectrum of colours on a screen, as shown in Fig. 7.2.

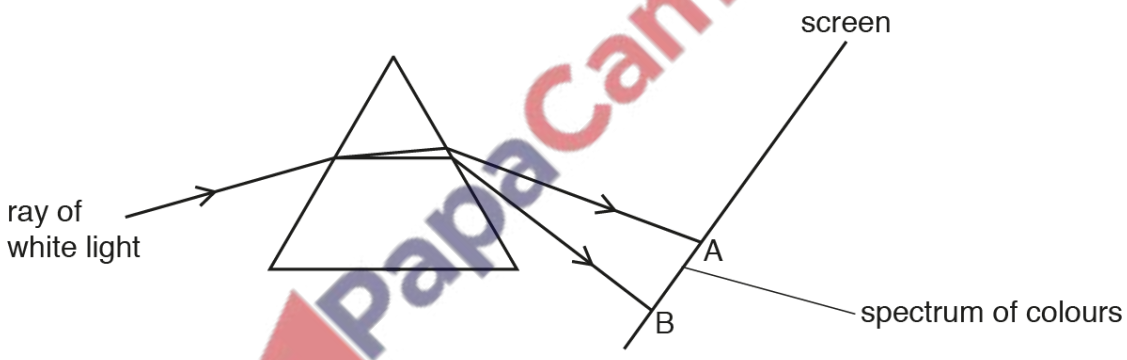


**Fig. 7.2**

**(i)** State the name of the process of separating white light into a spectrum.

..... [1]

**(ii)** Write the names of the seven colours that appear on the screen between A and B.

colour at A .....

.....

.....

.....

.....

.....

colour at B ..... [1]

**(c)** Visible light is one part of the electromagnetic spectrum.

State the name of **one** other part of the electromagnetic spectrum and describe a use of this type of radiation.

name of radiation .....

use of radiation .....

[2]

[Total: 5]

**(a)** Fig. 6.1 shows wavefronts of a wave approaching a narrow gap and passing through the gap. The wavelength is $\lambda$.

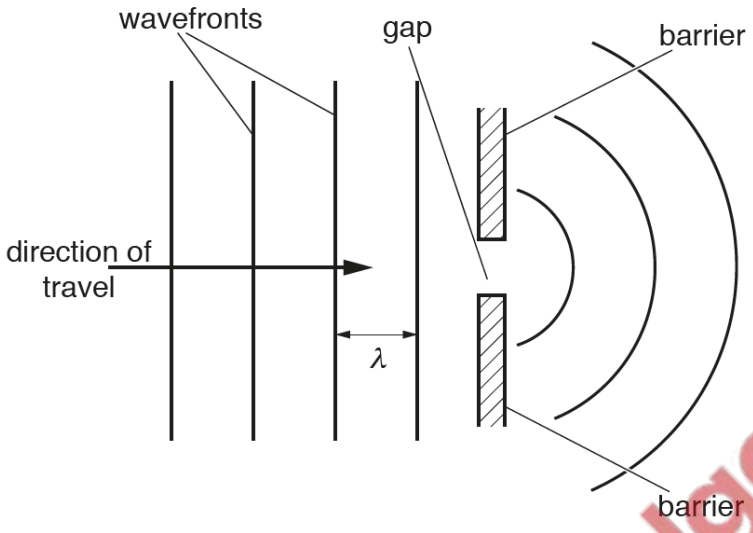


**Fig. 6.1**

**(i)** State the name of the process that occurs as the wave passes through the gap.

..... [1]

**(ii)** A wave with a wavelength $\frac{\lambda}{2}$ approaches the same gap.

On Fig. 6.2, draw three wavefronts for this wave as it approaches the gap and three more wavefronts as the wave continues beyond it. [3]

**Fig. 6.2**

**(b)** Table 6.1 shows 5 different types of electromagnetic wave.

In the blank column in Table 6.1, write the numbers 1 to 5 to show the order of wavelength. Write 1 for the wave with the shortest wavelength and 5 for the wave with the longest wavelength. [2]

**Table 6.1**

| type of electromagnetic wave | order of wavelength |
|---|---|
| gamma rays | |
| light | |
| microwaves | |
| ultraviolet | |
| X-rays | |

**(c)** **(i)** State the speed of radio waves in air.

..... [1]

**(ii)** A radio station transmits radio waves with a frequency of 96 MHz.
Calculate the wavelength of these radio waves.



wavelength = ..... [3]

[Total: 10]

**(a)** Fig. 8.1 shows an incomplete diagram of the electromagnetic spectrum.

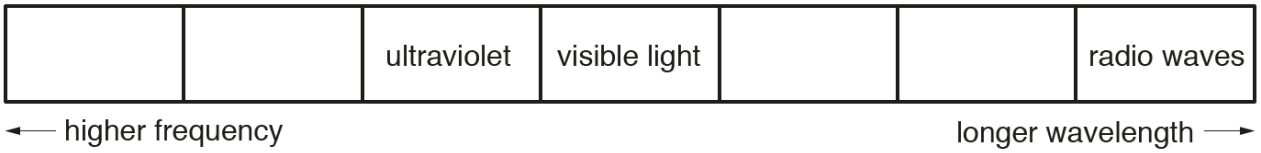


**Fig. 8.1**

Complete Fig. 8.1 with the names of the missing types of radiation in the correct boxes. [4]

**(b)** State **one** use for ultraviolet radiation.

..... [1]

[Total: 5]