Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

This question is about waves in the electromagnetic (e-m) spectrum.

(i) Figure 1 shows some types of radiation that form part of the e-m spectrum and some uses of e-m radiation.

Draw **one** straight line from each type of e-m radiation to its use.
One line has been drawn for you.

(3)

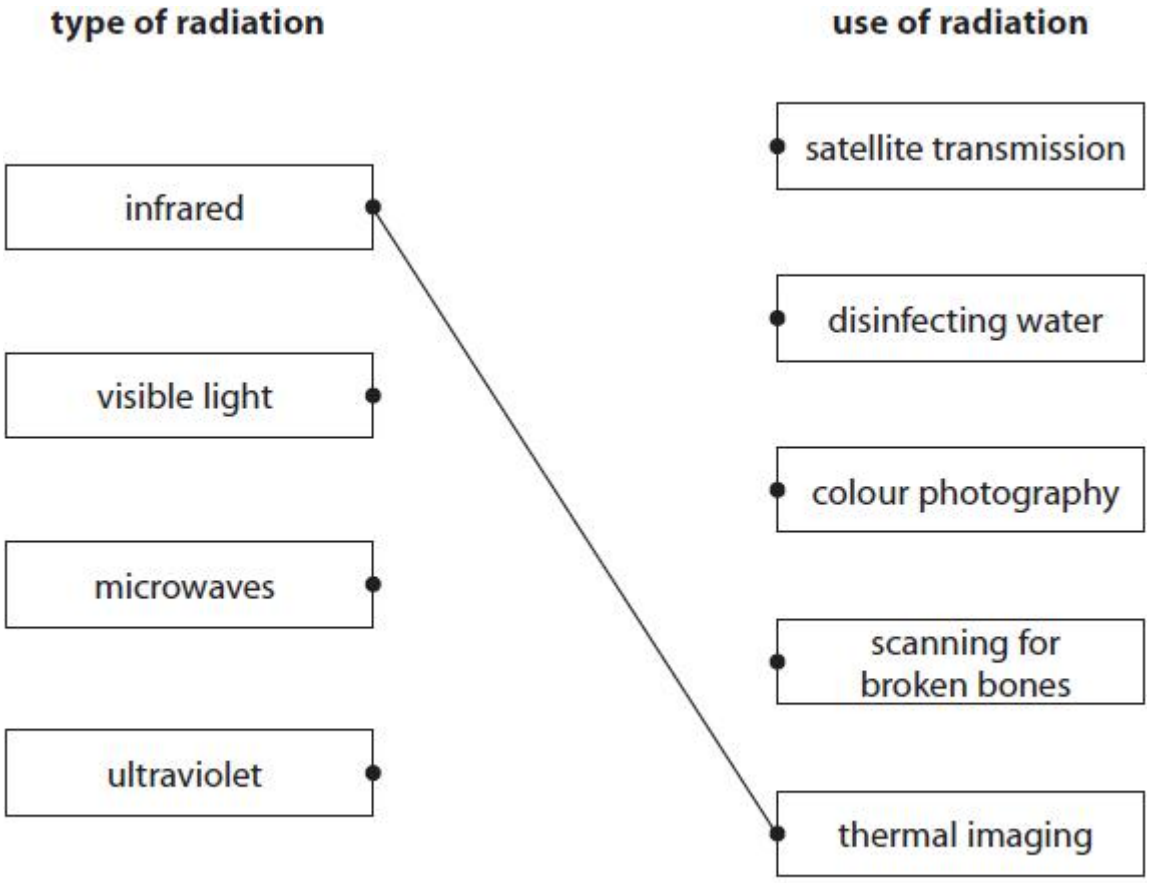

Figure 1

(ii) Which of these waves has the highest frequency?

(1)

- ☒ **A** infrared
- ☒ **B** microwaves
- ☒ **C** ultraviolet
- ☒ **D** visible light

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(Total for question = 4 marks)

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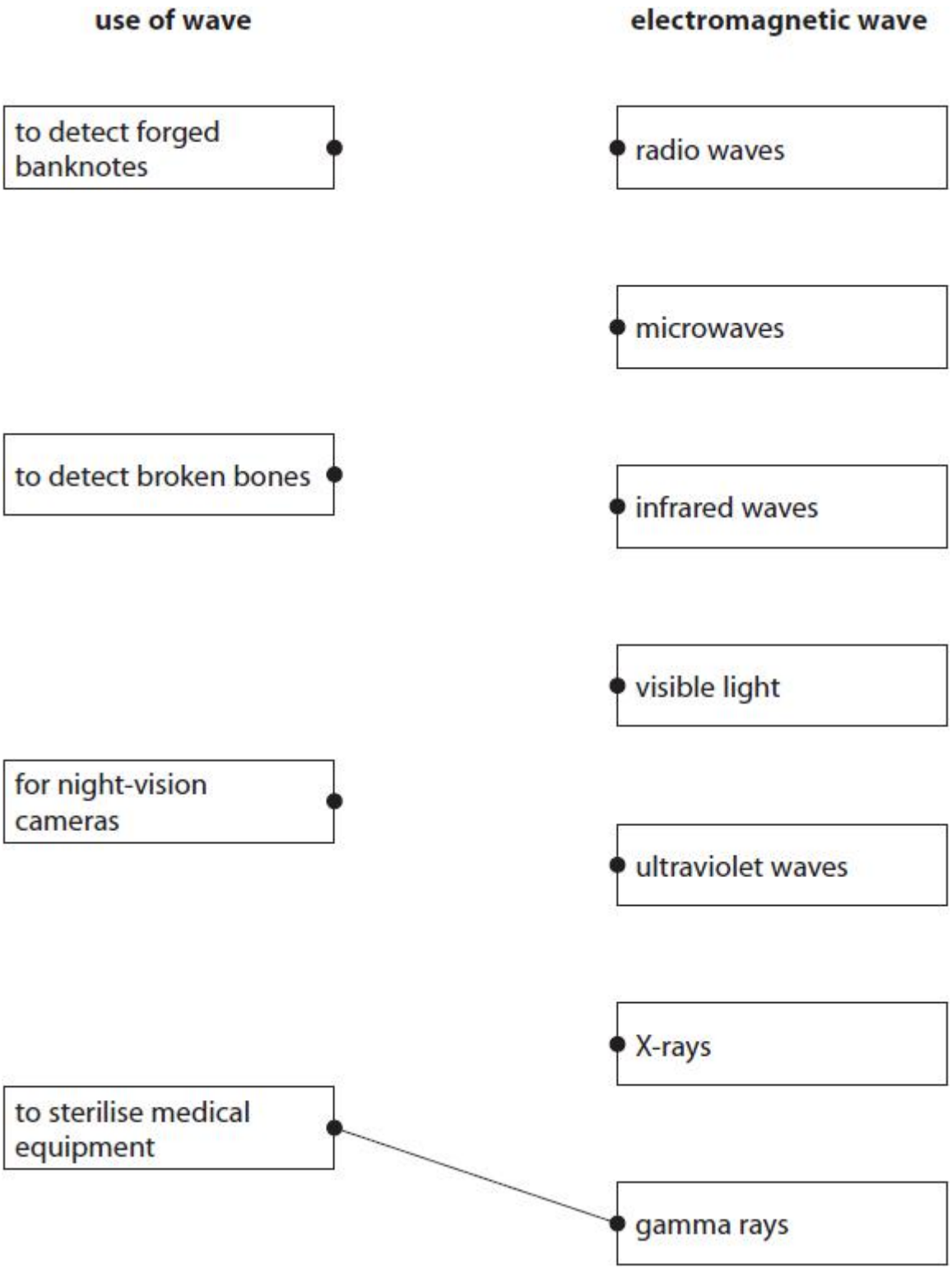
Q2.

Draw **one** line from each **use of wave** to the matching **electromagnetic wave**.

One line has been drawn for you.

(3)



(Total for question = 3 marks)

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Q3.

This question is about reflection and refraction of light.

(i) Figure 4 shows a ray of light travelling to a plane mirror.
On Figure 4, draw the ray of light after it **reflects** off the mirror surface.

(2)

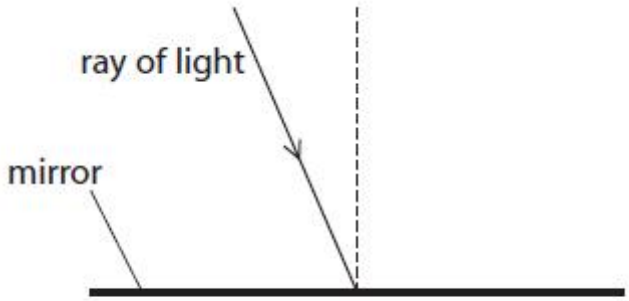

Figure 4

(ii) Figure 5 shows a ray of light in air travelling to a glass block.
On Figure 5, draw the ray of light after it **refracts** at the surface of the glass block.

(2)

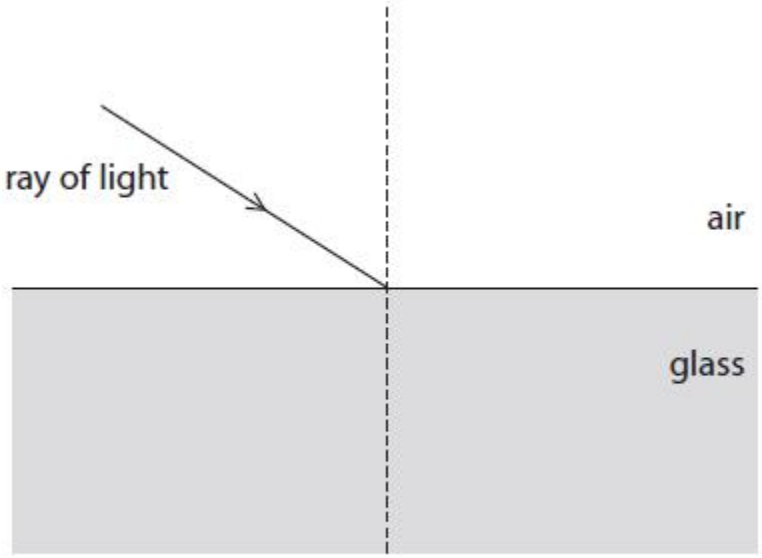

Figure 5

(iii) Figure 6 shows a ray of light in water, travelling to the surface of the water.
The angle marked **X** is greater than the critical angle.
On Figure 6, draw the ray of light after it reaches the surface of the water.

(2)

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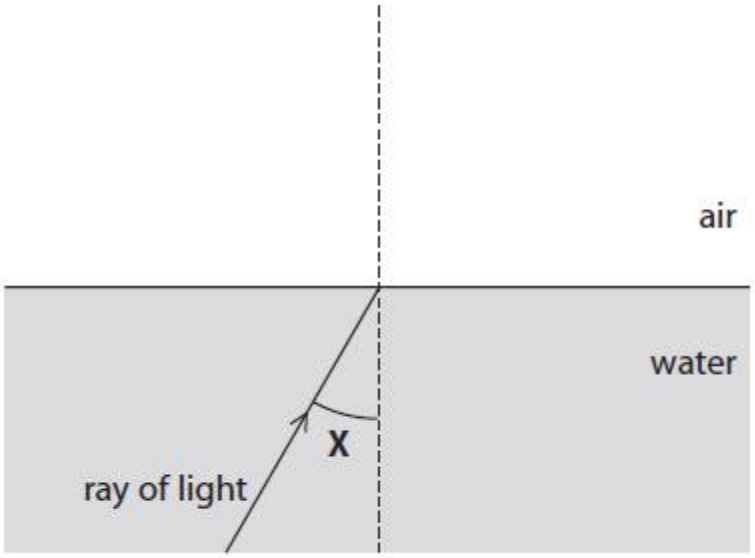

Figure 6

(Total for question = 6 marks)

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Q4.

(i) Figure 4 shows two light rays hitting a glass lens.

On Figure 4, draw the two light rays after they leave this lens.

(1)

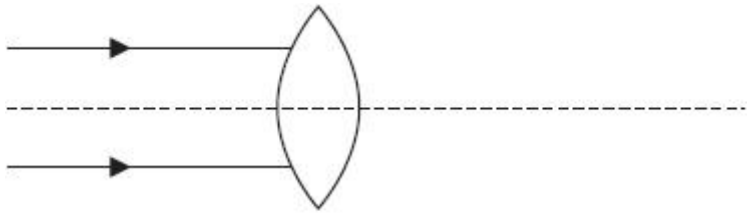

Figure 4

(ii) Figure 5 shows two light rays hitting a different glass lens.

On Figure 5, draw the two light rays after they leave this lens.

(1)

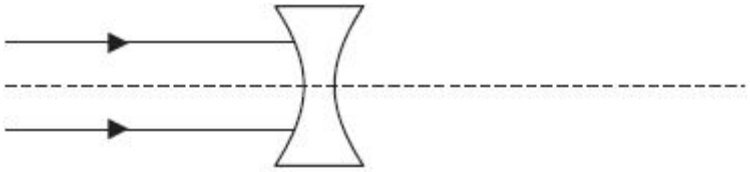

Figure 5

(iii) A lens has a focal length of 25 cm.

Calculate the power of the lens.
Use the equation

$$\text{power in dioptres} = \frac{1}{\text{focal length in metres}}$$

(2)

power of the lens = ... dioptres

(Total for question = 4 marks)

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