

2. Electromagnetic waves consist of visible light and radiations higher or lower than the wavelength of light.

(a) (i) Identify ONE type of radiation with wavelength:

a) longer than visible light _____

b) shorter than visible light. _____

(2 marks)

(ii) Complete Table 2 which relates to the sources and uses of electromagnetic waves.

TABLE 2

Name of Wave	Source	Use
X-ray		To take X-ray pictures
Gamma Ray		
Radio wave		

(5 marks)

(b) (i) If gamma rays have a wavelength of 3.0×10^{-12} m, calculate the frequency of this type of radiation.

[Velocity of all electromagnetic waves = $3.0 \times 10^8 \text{ m s}^{-1}$]

(3 marks)

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- (ii) A ray of red light emerges from a glass block as shown in Figure 1.

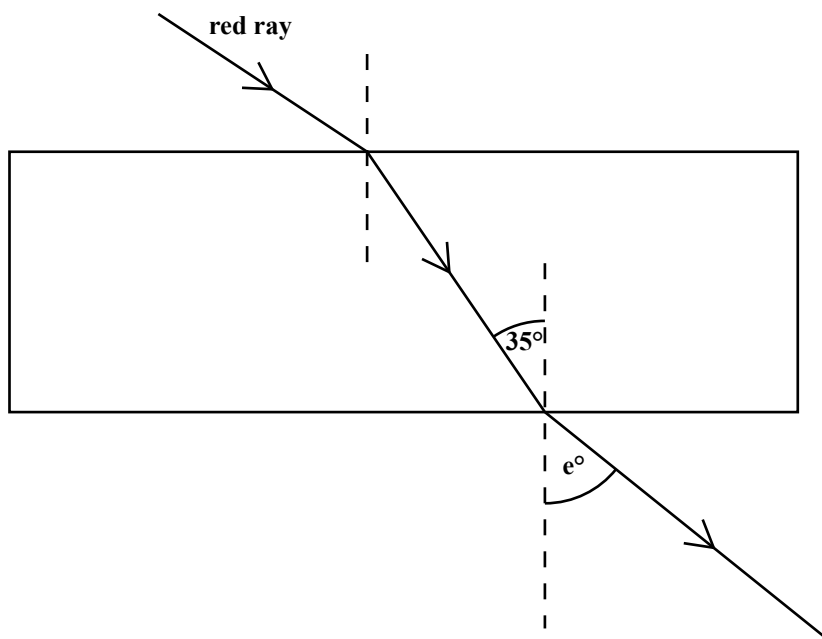


Figure 1

If the block has a refractive index of 1.5, determine the value of the angle e .

(5 marks)

Total 15 marks

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