4 **(a)** State the principle of superposition.

.....

.....

..... [2]

(b) An electromagnetic wave of wavelength 0.026 m in free space is incident normally on an aluminium sheet, as shown in Fig. 4.1.

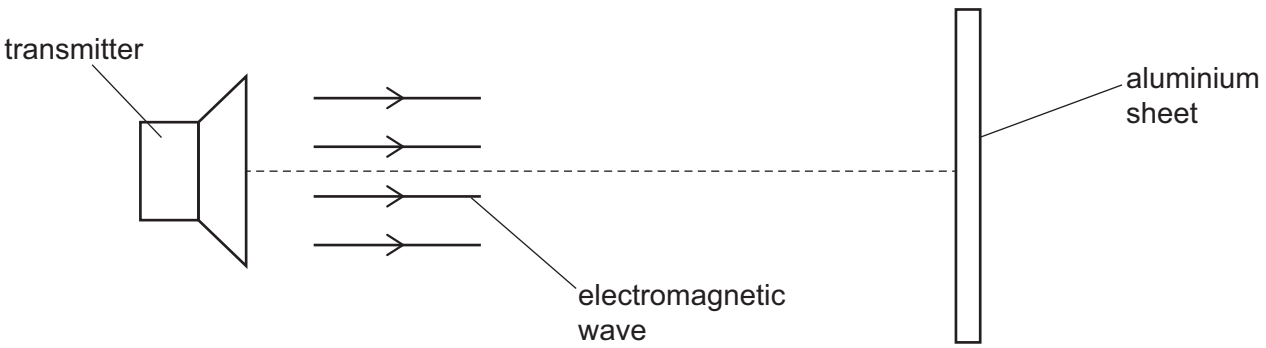

Fig. 4.1

The wave reflects at the aluminium sheet and a stationary wave is formed in the region between the transmitter and the sheet.

(i) Explain how the stationary wave, including its nodes and antinodes, is formed.

.....

.....

.....

.....

..... [3]

(ii) Calculate the frequency of the electromagnetic wave.

frequency = ... Hz [2]

(iii) State the principal region of the electromagnetic spectrum to which the wave belongs.

..... [1]

(iv) Determine the distance between a node and an adjacent antinode.

distance = ... m [1]

[Total: 9]