5 (a) State **two** features of a stationary wave that distinguish it from a progressive wave.

1. .....

.....

2. .....

.....

[2]

(b) A point source of microwaves is placed a short distance away from a metal plate, as shown in Fig. 5.1.

Fig. 5.1

A stationary wave is formed between the source and the plate.

Explain how this stationary wave is formed.

.....

.....

..... [2]

(c) A microwave detector is now positioned between the source and the metal plate in **(b)**. The detector is gradually moved towards the metal plate and away from the source of microwaves.

The variation of the intensity of the signal received at the detector with distance from the source is shown in Fig. 5.2.

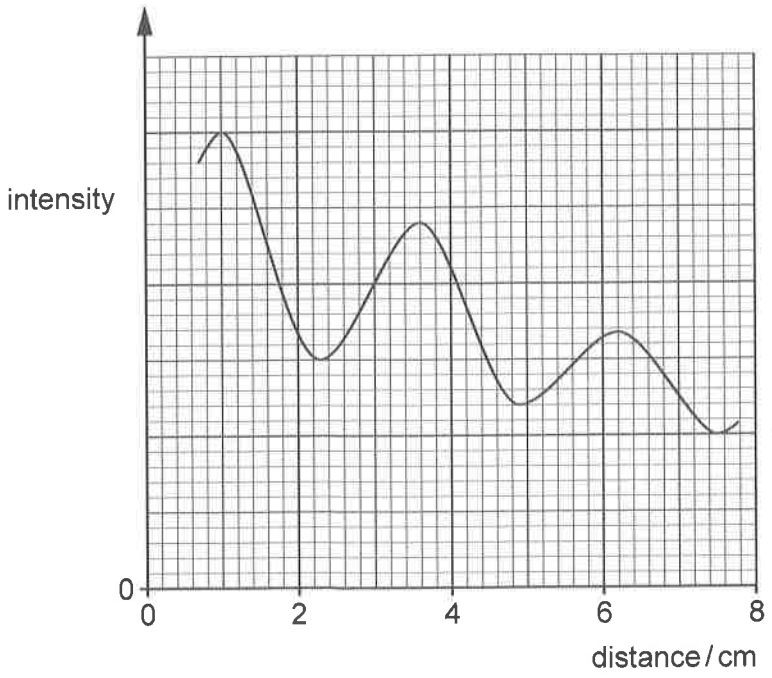

Fig. 5.2

(i) Explain why the intensity of a minimum is never zero.

.....

.....

.....

.....

.....

..... [3]

(ii) Determine the wavelength of the microwaves.

wavelength = ... cm [1]

(iii) Calculate the frequency of the microwaves.

frequency = ... Hz [2]

[Total: 10]