4 The lens in a magnifying glass is a converging lens.

(a) Fig. 4.1 shows the lens of the magnifying glass, its two focal points, F_1 and F_2, and its principal axis.

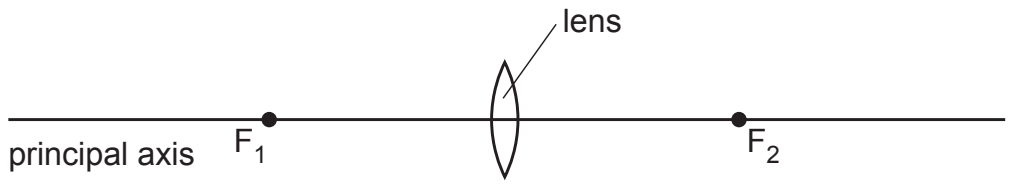

Fig. 4.1

(i) State what is meant by 'focal point'.

.....

.....

..... [2]

(ii) A student using the magnifying glass sees a magnified image of an object.

On Fig. 4.1, mark:

- a point X on the principal axis for a possible position of the object
- a point E for a possible position of the student's eye.

[1]

(iii) Underline **two** words in the list that describe the image produced in **(a)(ii)**.

inverted **real** **upright** **virtual**

[1]

(b) The refractive index of the glass used to make the lens is 1.5.

(i) The speed of light in air is 3.0×10^8 m/s.

Calculate the speed of light in the glass.

speed in glass = ... [2]

(ii) State what happens to the wavelength of light as it passes into the lens.

.....

..... [1]

(c) Converging lenses are used in spectacles (glasses) to correct one problem with vision.

State the name of the problem and explain how a converging lens is used to correct it. You may draw a diagram.

name of problem: .....

.....

.....

.....

.....

[3]

[Total: 10]