

6 Fig. 6.1 shows part of an optical fibre used in high-speed broadband communication.

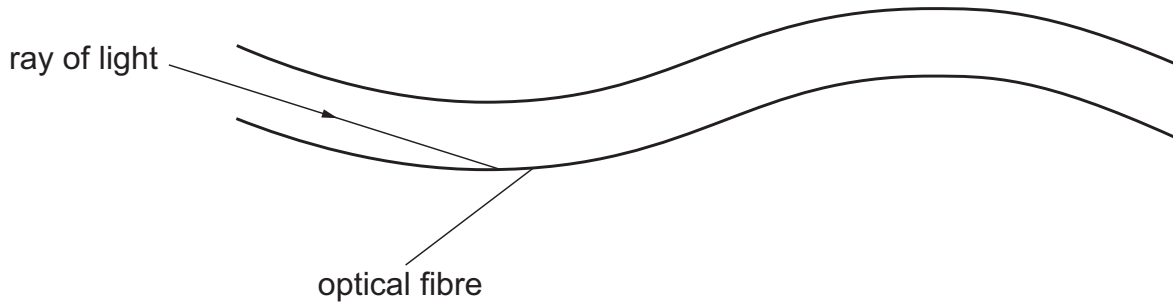


Fig. 6.1

(a) State **two** advantages of using optical fibres in high-speed data transmission compared to electrical signals sent on copper wires.

.....
..... [2]

(b) (i) The optical fibre is made of glass with a refractive index of 1.4.

Calculate the critical angle c .

$c =$ [3]

(ii) State the meaning of critical angle.

.....
..... [1]

(iii) On Fig. 6.1, label the angle of incidence of the ray of light as it hits the wall of the glass fibre. Draw the continuation of the ray until it leaves the glass fibre. [2]