

Q5. A person has near point at 100cm. What power of lens is needed to read at 20cm if he/she uses (a) contact lens, (b) spectacles having glasses 2'0 cm separated from the eyes?

Solution:

(a) When contact lens is used,

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

$$\frac{1}{-1} - \frac{1}{-0.2} = \frac{1}{f}$$

$$f = 1/4\text{m}$$

$$P = 4\text{D}$$

(b) When we use spectacles,

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

$$\frac{1}{-1} - \frac{1}{0.18} = \frac{1}{f}$$

$$f = \frac{1}{4.5}\text{m}$$

$$P = \frac{1}{f} = 4.5\text{D}$$