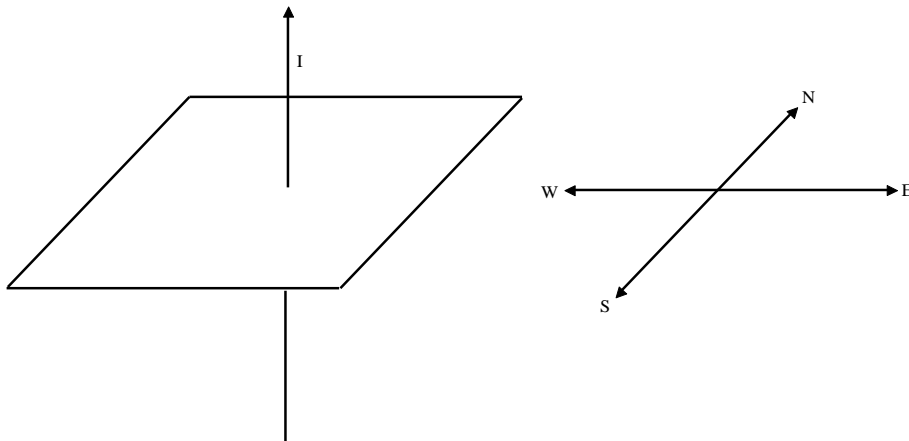
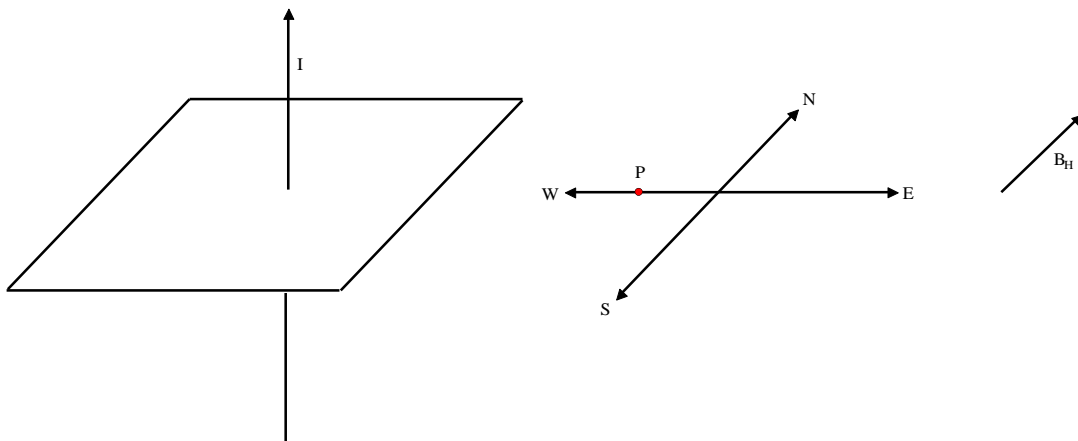


A vertical straight long conductor carries a current $I = 3 \text{ A}$ vertically upwards as shown in the figure. The distance of the neutral point on the horizontal plane from the wire is: [$B_H = 3 \times 10^{-5} \text{ T}$]



- (A) 0.5 cm (B) 3 cm (C) 1.5 cm (D) 2 cm

Solution



The neutral point will be in the west direction as,

$$B_P = B_{\text{Wire}} - B_H$$

$$\therefore B_{\text{Wire}} = \frac{\mu_0}{4\pi} \frac{2I}{d} = B_H = 3 \times 10^{-5}$$

$$\therefore 10^{-7} \times \frac{2 \times 3}{d} = 3 \times 10^{-5}$$

$$\therefore d = 2 \text{ cm}$$

Hence, (D)