

A power transmission line feeds input power at 2300 V to a step down transformer with its primary windings having 4000 turns. The output power is delivered at 230 V by the transformer. If the current in the primary of the transformer is 5A and its efficiency is 90%, the output current would be : [JEE MAIN 2019](#)

A 50 A

B 45 A

C 35 A

D 25 A

1. For the given step-down transformer

$$E_p = 2300V ; E_s = 230V ; N_p = 4000 ; I_p = 5A$$
$$; \eta = 90\%$$

In a transformer

$$E_p = \frac{I_s}{I_p}$$

$$E_s = \frac{I_p}{I_s}$$

$$\Rightarrow \frac{2300}{230} = \frac{I_s}{5}$$

$$\Rightarrow I_s = 50A$$

Hence output current $\Rightarrow \eta I_s$

$$\Rightarrow \left(\frac{90}{100} \right) (50)$$

$$\Rightarrow \boxed{45A}$$