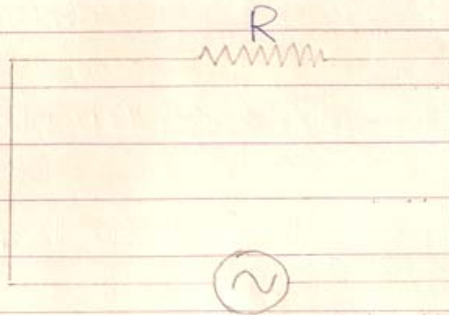




① A.C through a pure-resistance:



Let $e = E_p \sin \omega t$ — (1) the e.m.f applied across the resistance at any instant of time t .
Let i be the current flowing through the circuit at the instant t .

E.m.f e of the circuit at the instant t :

$$iR = e \quad iR = E_p \sin \omega t$$

$$i = \frac{E_p \sin \omega t}{R} \quad \text{--- (2)}$$

When $\sin \omega t = 1 = \text{max}^m$; $i = I_p = \text{max}^m$
from (2): $I_p = \frac{E_p \cdot 1}{R}$ — (3)

putting eqⁿ (3) in (2) :-

$$i = I_p \sin \omega t \quad \text{--- (4)}$$

Comparing eqⁿ (1) and (4) we find that in pure resistance the p.d across the resistance and the current are in the same phase.