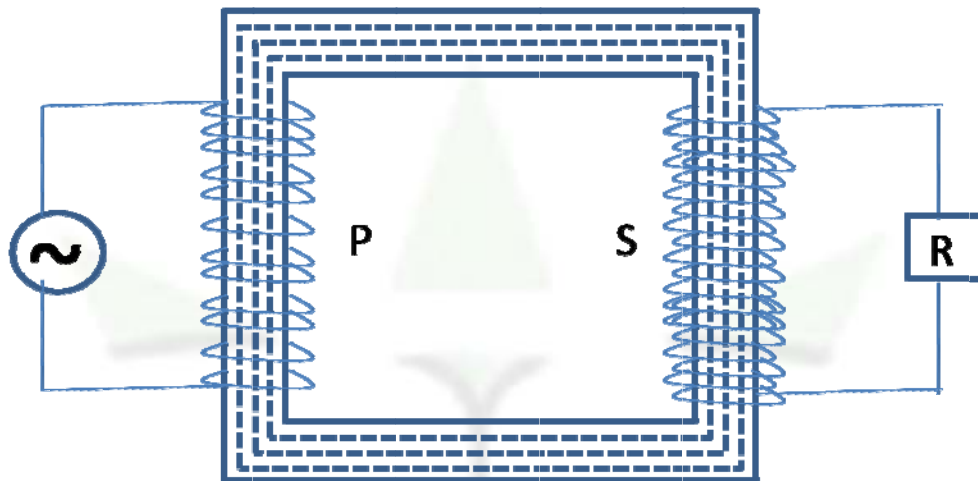




Transformer

Transformer: Transformer is a device for converting high voltage at low current to high current at low voltage or vice versa. The A.C transformer is based on the principle of electromagnetic induction and is basically mutual inductance.



It consists of two coils known as Primary (P) and Secondary(S) having different no. of turns and are wound on two opposite arms of a thick laminated iron core. The alternating emf to be transformed is connected across the primary coil. The varying current flowing through the primary coil produces varying magnetic lines of force. The magnetic iron core provides an easy path for the flow of lines of force hence the lines of force flowing through the core cuts the secondary coil and induces an emf across the secondary. An induced current flow through the secondary coil and thus a potential drop is obtained across the resistance which is known as output voltage.

e_p = emf applied across the primary

e_i = input voltage

e_s = the emf applied across the secondary

= output voltage = e_0

N_p & N_s = the no. of turns in the primary and secondary coil respectively.

If $N_p > N_s$, $e_s > e_p$ & $i_s < i_p$ the transformer is said to be step up transformer.

If $N_p < N_s$, $e_s < e_p$ & $i_s > i_p$ the transformer is said to be step down transformer.