TRANSFORMER

INTRODUCTION:

The transformer is a static device which is used to step up or step down voltage in an A.C. circuit. It consists of a laminated core of iron carrying two windings. The one connected to the supply is known as primary and the other connected to the load as the secondary winding. Its working principle is the Mutual Induction. When primary is connected to an A.C. supply an alternating flux is set up in the core. This flux linking with the secondary winding induces in it an alternating e.m.f.

The ratio of the applied voltage to the secondary voltage is very nearly equal to the ratio of the turns i.e.

\[
\frac{E_s}{E_t} = \frac{N_s}{N_t}
\]

There should neither be vibration nor leakage in a transformer. It is for this purpose that the transformer coils are immersed in varnish. Except for very small sizes (below 5KVA), cores and windings of the transformer have to be cooled otherwise it may be damaged. The mineral oil is one of the suitable coolent. Due to the flow of heavy currents in the windings, various losses such as Iron Losses and Copper Losses also take place which need to be minimized for higher efficiency.

Efficiency is the ratio of output to input, while percentage voltage regulation is the percentage drop of volts from no load to full load. For better performance, it is usually desired to have the terminal P.D. constant i.e., minimum variation from no load.