



SNS COLLEGE OF TECHNOLOGY

An Autonomous Institution

Coimbatore-35



Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade(III cycle)
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

IYEAR/ II SEMESTER

20 ECT201 Basics of Electrical Engineering and Instrumentation

TOPIC–Transformer



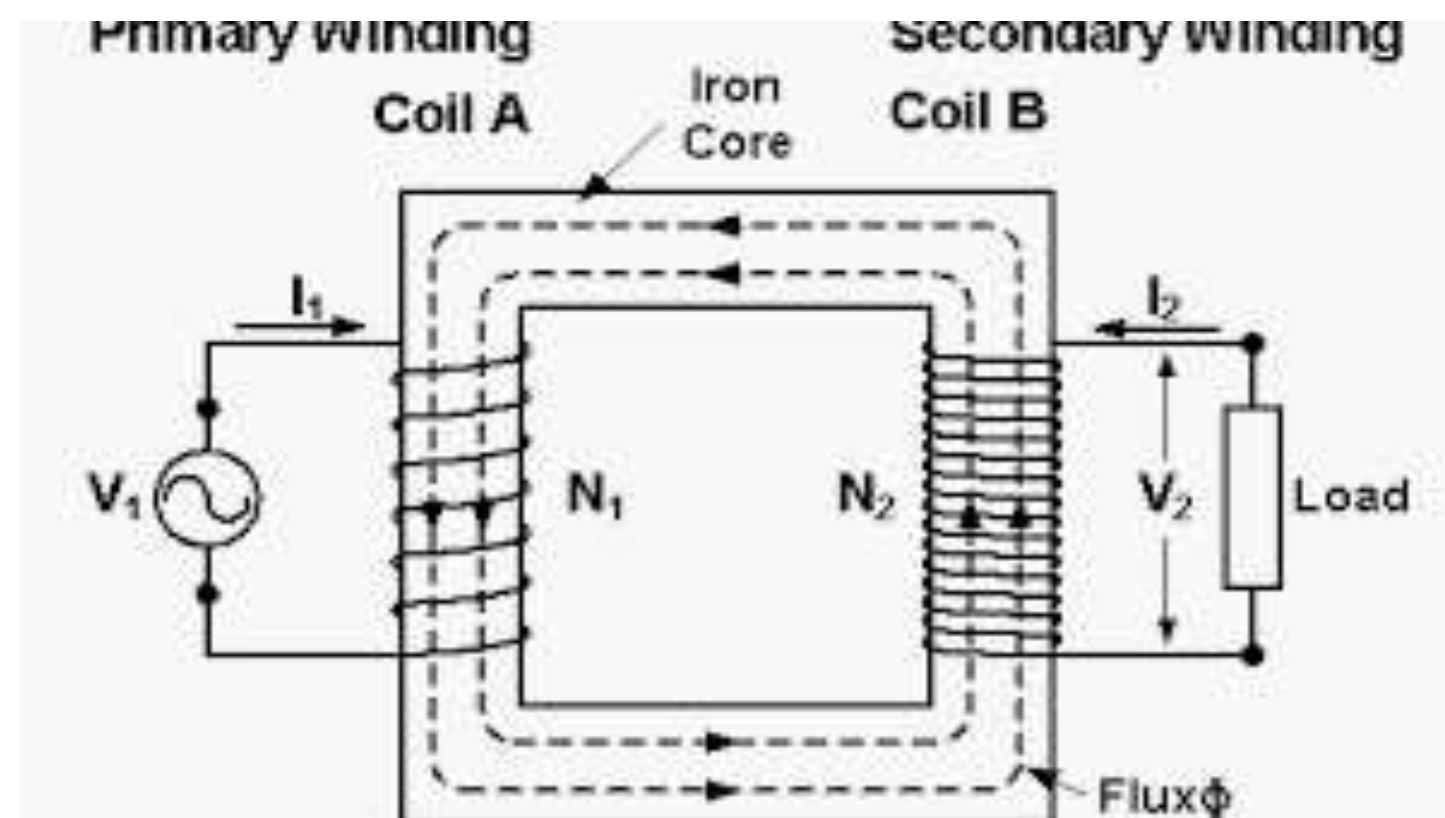
INTRODUCTION



- **Electrical transformer** is a static electric machine which transforms electrical power from one circuit to another circuit, without changing the frequency. Transformer can increase or decrease the voltage with corresponding decrease or increase in current.



Working Principle Of Transformer

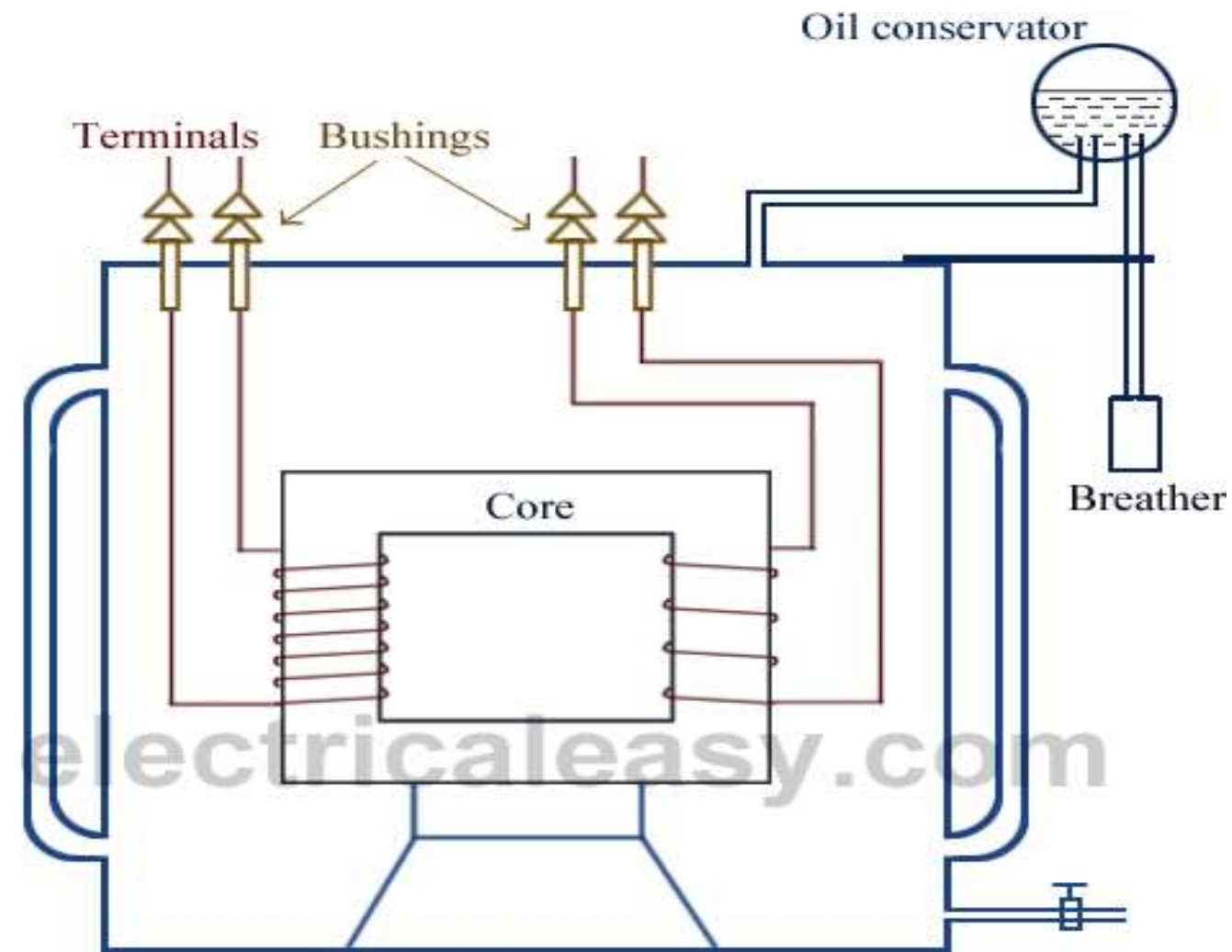




- The basic principle behind working of a transformer **when two coils are inductively coupled and if current in one coil is changed uniformly then e.m.f get induced in other coil**
- Basically a transformer consists of two inductive coils; primary winding and secondary winding. The coils are electrically separated but magnetically linked to each other.
- When, primary winding is connected to a source of alternating voltage (has N_1 number of turns) secondary winding is connected to load (has N_2 number of turns)
- when primary winding is excited by alternating voltage it circulates an alternating current.
- This produces an alternating flux which links with secondary winding
- As flux is alternating according to Faraday's law of electromagnetic induction mutually induced e.m.f gets developed in secondary winding
- D.C supply cannot be used for transformers
- As transformers works on principle of mutual induction, for which current in one coil must change uniformly.
- If D.C supply is given current will not change due to constant supply and transformer will not work.



construction





Various parts of transformer

1. CORE

Made up of high grade silicon steel lamination Used to carry flux produced by winding

2. Limb

Vertical portion of core

Carry windings

3. Yoke

Top and bottom horizontal portion of core

Used to carry flux in one winding to other winding

4. Windings

Coils used are wound on limbs and insulated from one another Used to carry current and produce necessary flux for functioning of transformer



5. Conservator

- Oil in transformer expands when temperature inside transformer increases due to heat and contracts when temperature decreases. Function of conservator is to take up the expansion and contraction of oil.

6. Breather

Smaller transformers are not fully filled with oil; there will be small space between oil level and tank.

Tank is connected to atmosphere by vent pipe.

When oil expands, air will go out, and when oil contracts, air is taken in.

Function :

It is a device that extracts moisture from air when air is taken in and does not allow oil to come in contact with moisture.

It contains silica gel to absorb moisture.

7. Explosion vent

It is a bent pipe fitted on the main tank that acts as a relief valve.

It uses a non-metallic diaphragm which bursts when pressure inside the transformer becomes excessive, it releases pressure and protects the transformer.

8. Buchholz relay

It is a safety gas-operated relay connected to the transformer. When faults develop inside the transformer, gases are released. The Buchholz relay operates with these gases and trips the circuit breaker to protect the device.



THANK YOU