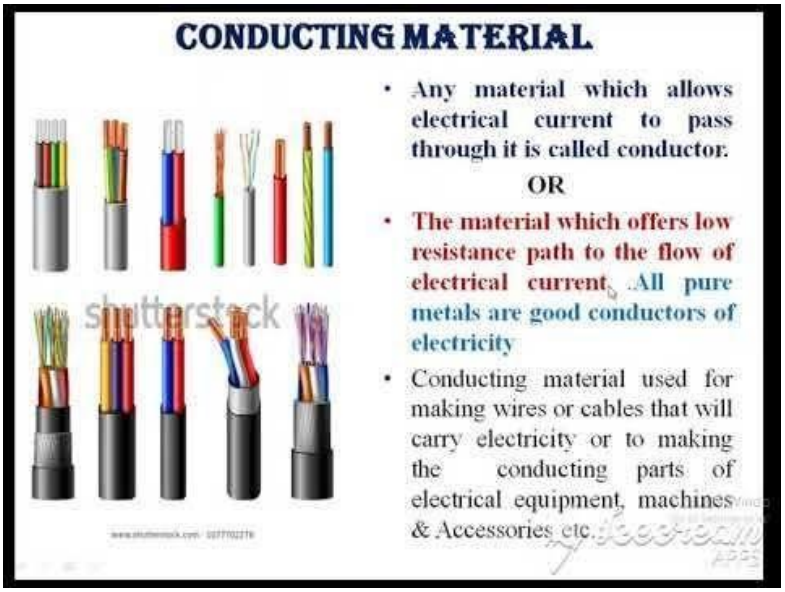
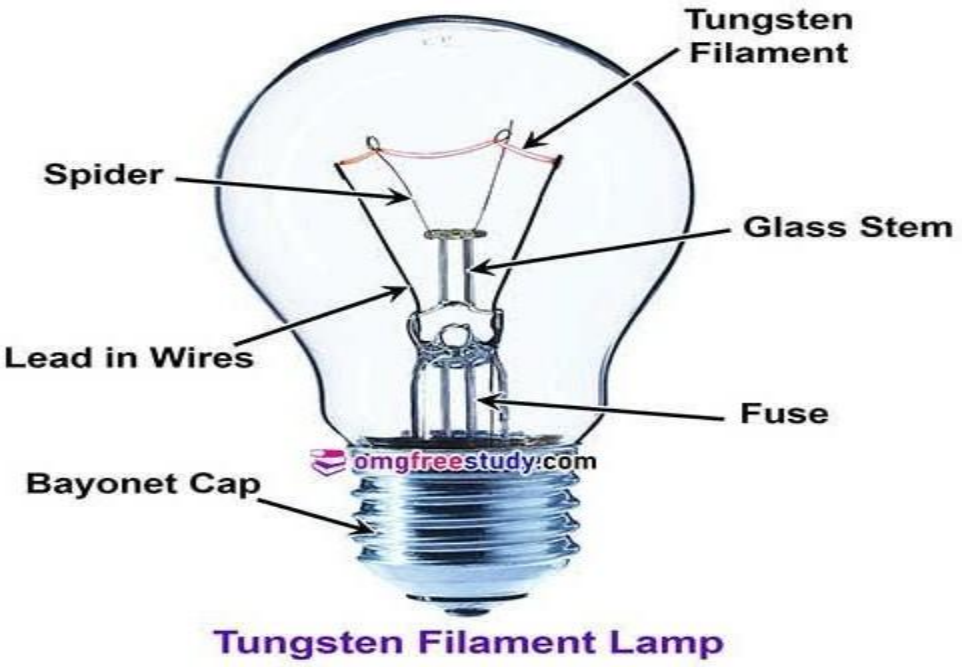
GANDHI SCHOOL OF ENGINEERING,BHABANDHA,BERHAMPUR

SUBJECT:ELECTRICAL MACHINE
SEMESTER:4TH

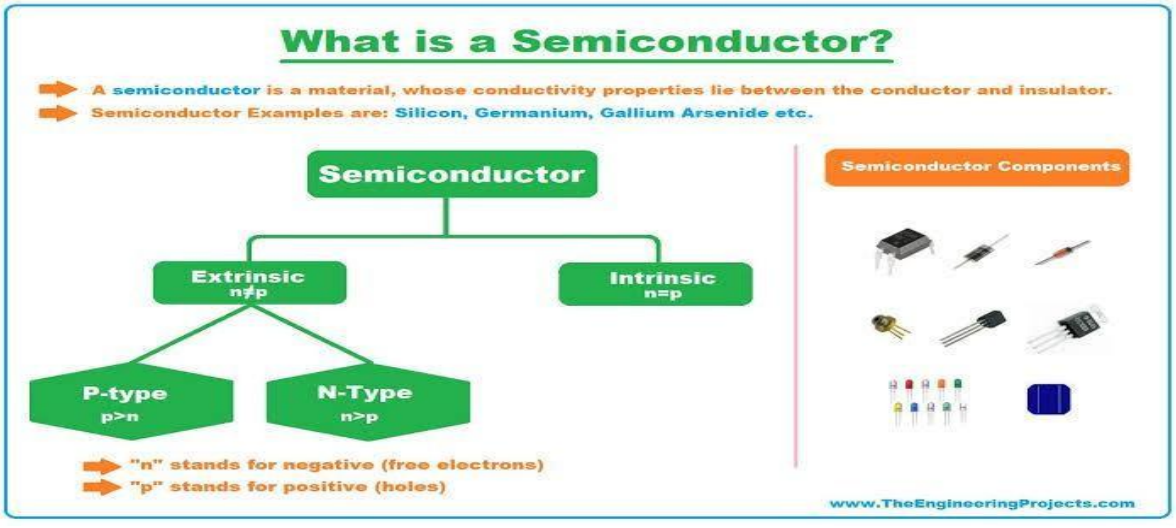
PREPARED BY: DEBASHRI PATNAIK

1ST CHAPTER- ELECTRICAL MATERIAL





Tungsten Filament Lamp



SEMICONDUCTOR MATERIALS

Material	Example	ρ (Ω m)
Conductor	Copper	10^{-6}
Semi-conductor	Germanium	0.5
Semi-conductor	Silicon	500
Insulator	Mica	10^{10}

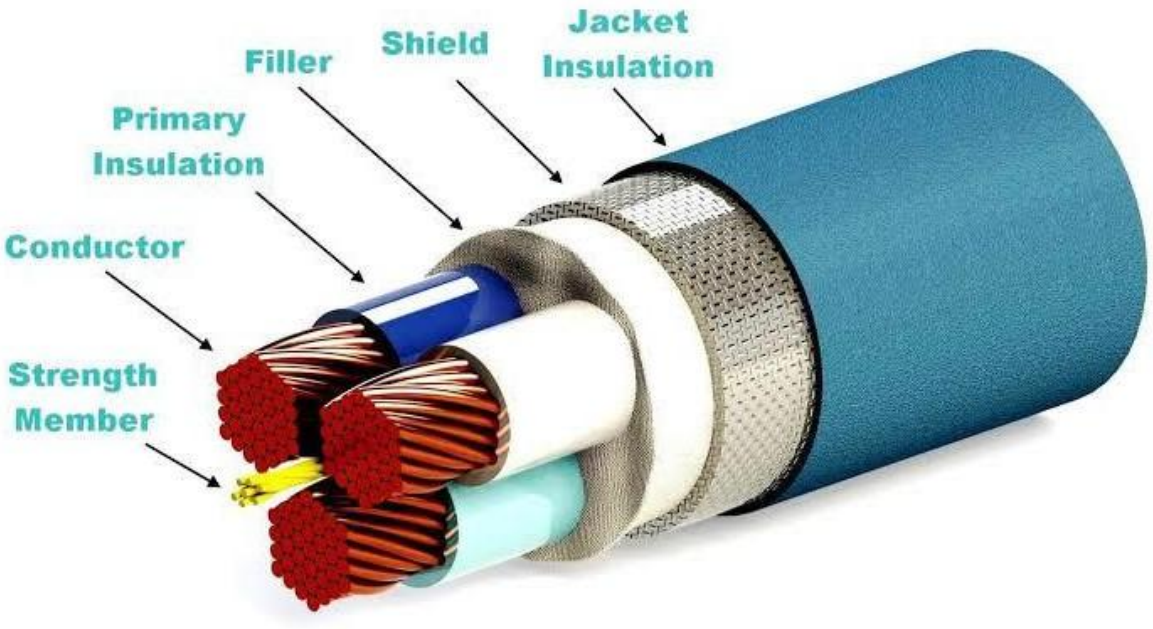
UNITS

Resistivity, ρ is given by: $\rho = (RA)/L = \Omega m^2 / m = \Omega m$

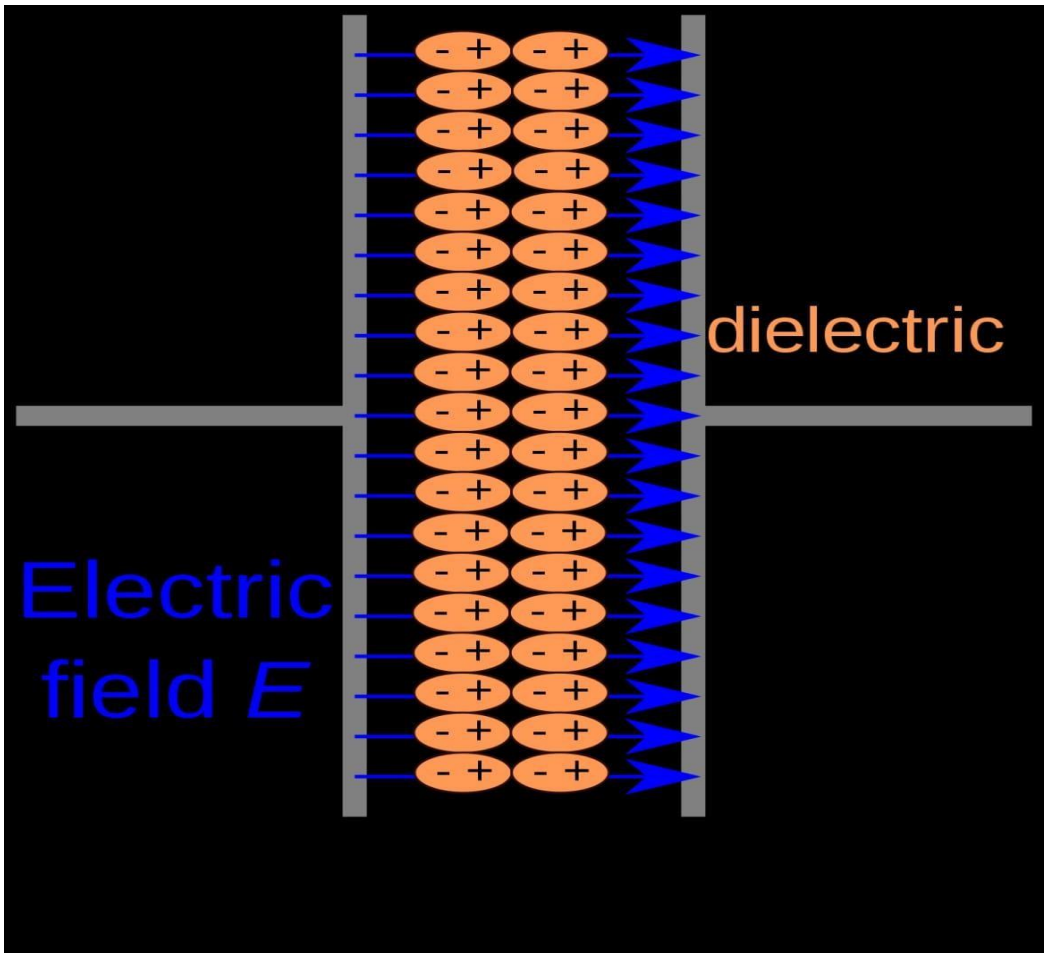
Conductivity, G is given by: $G = 1/\rho = \Omega^{-1}m^{-1} = S$ (Siemens)

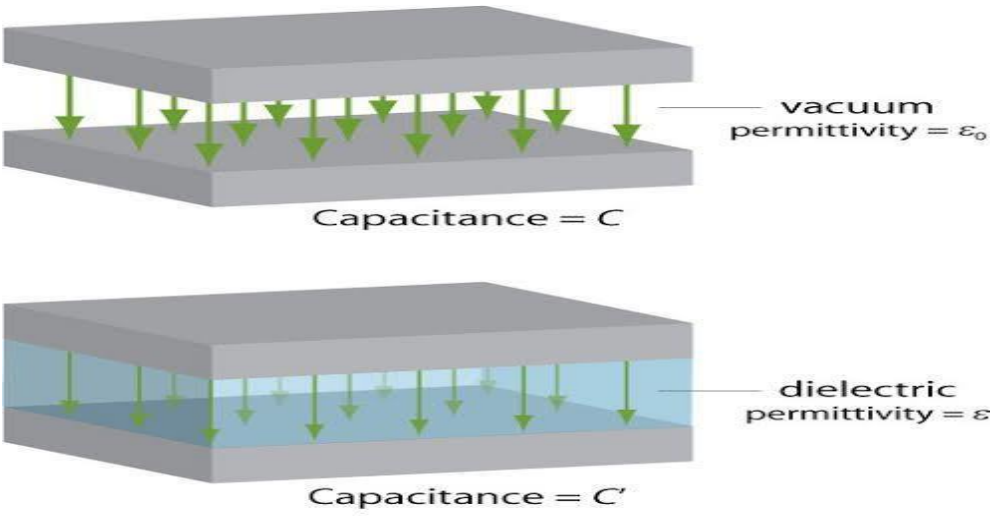
Insulating material

Insulating Materials



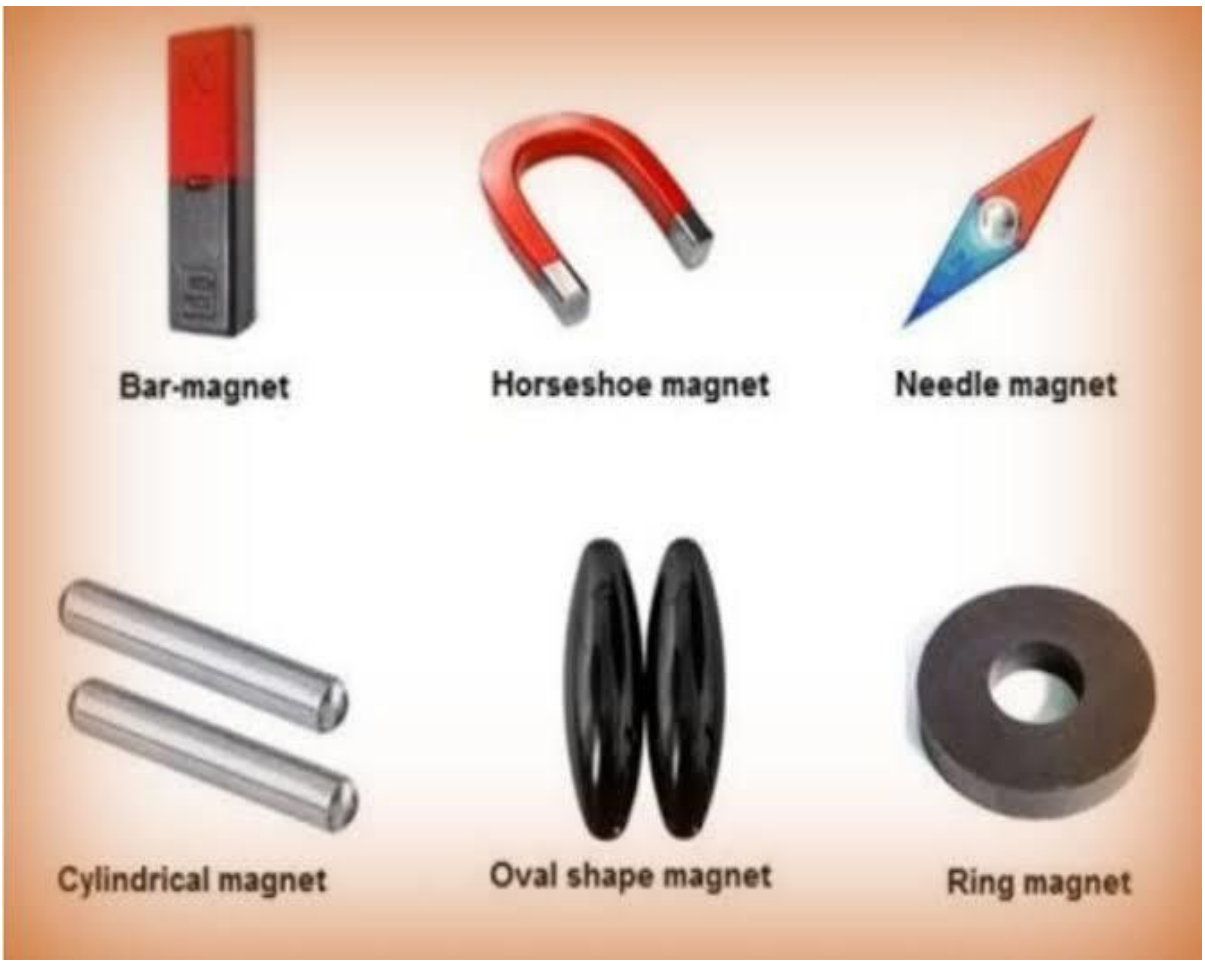
Dielectric material





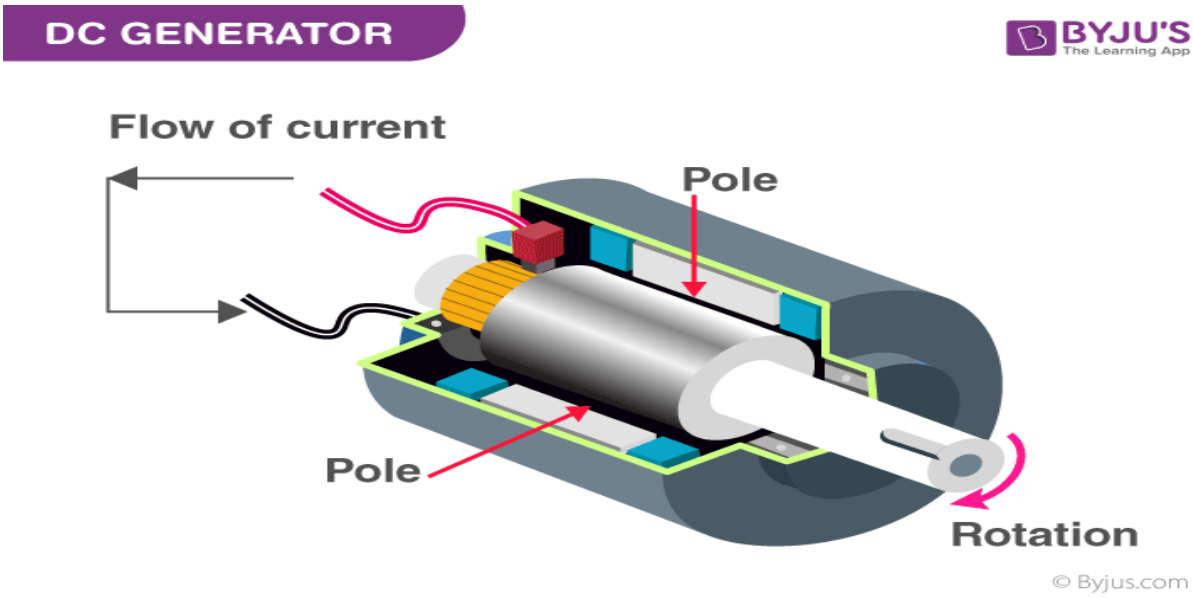
$$\kappa = C'/C \qquad \kappa = \varepsilon/\varepsilon_0$$

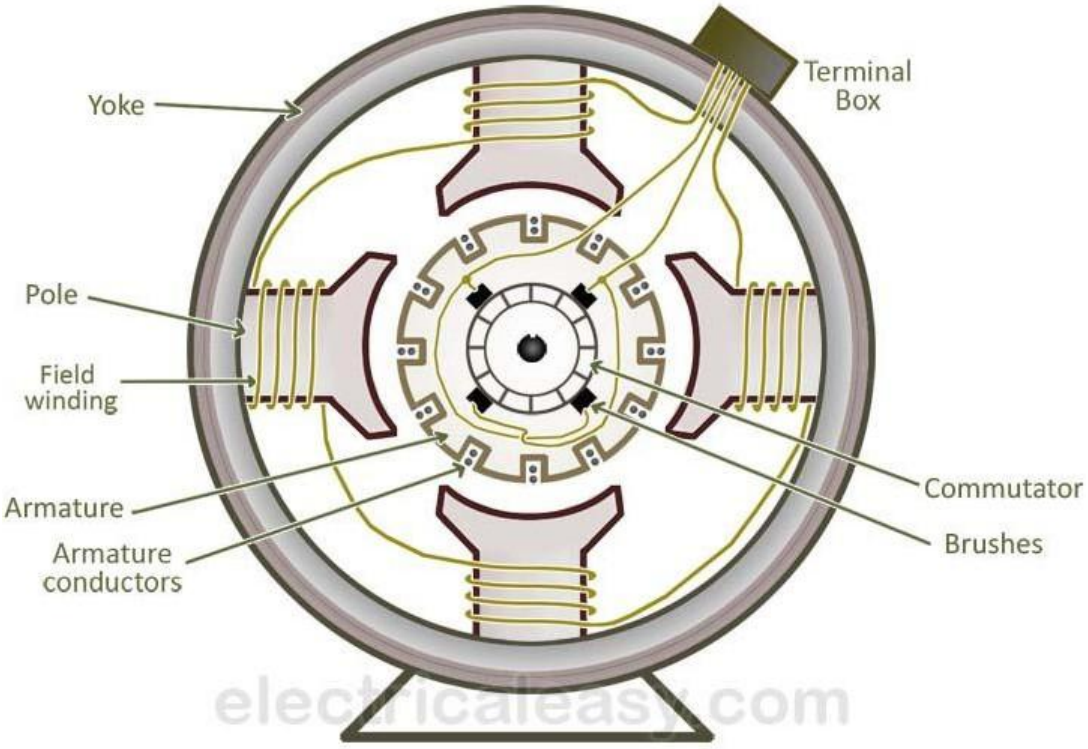
Magnetic material

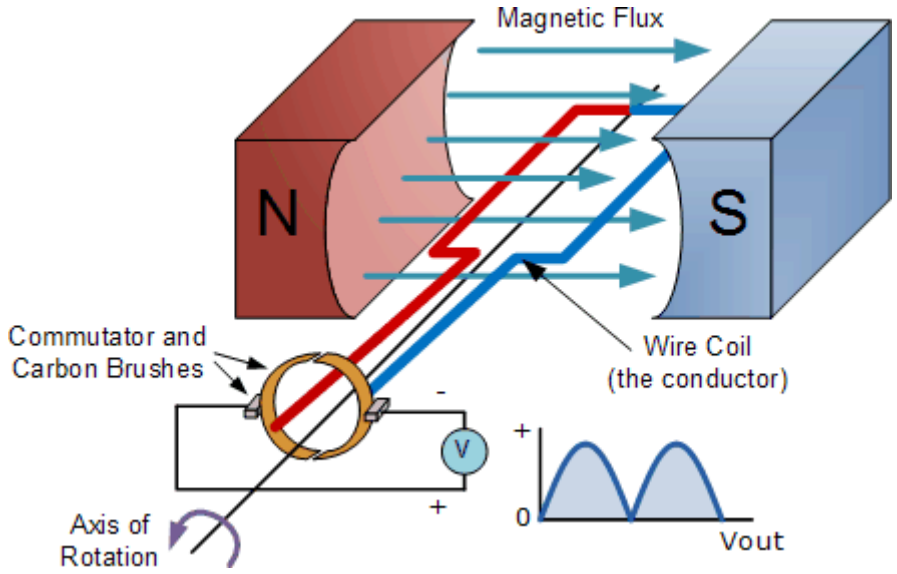



S14
K460K1
07 28

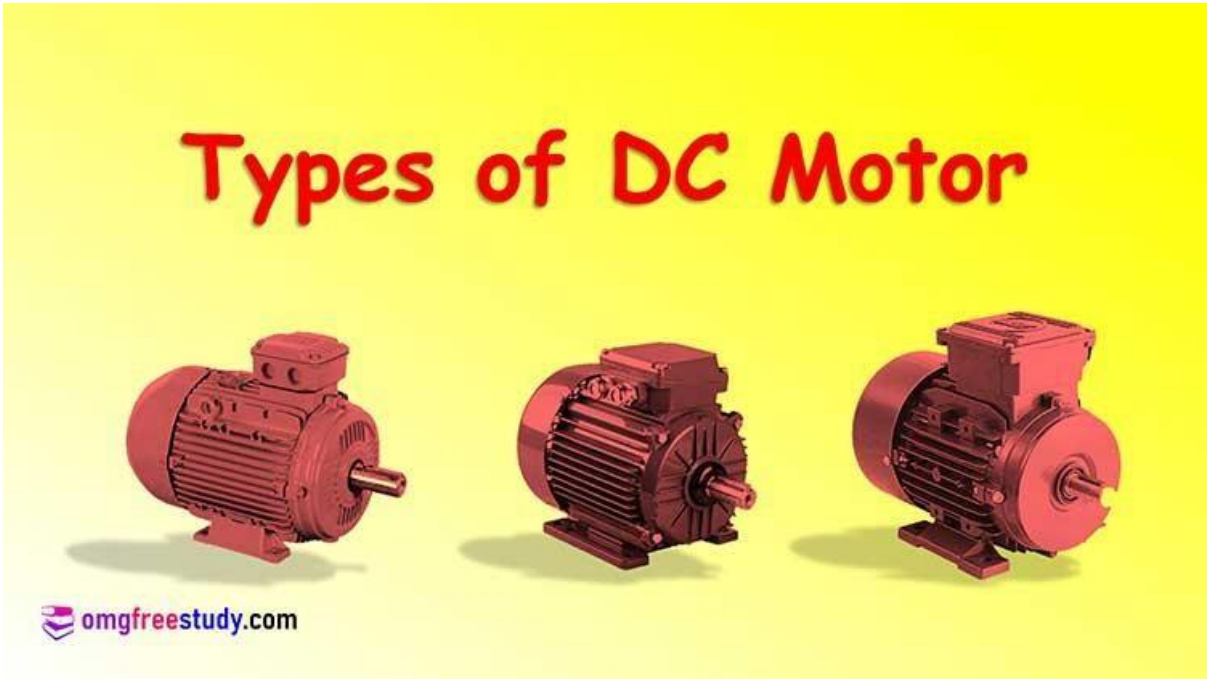
2ND CHAPTER-D.C GENERATOR

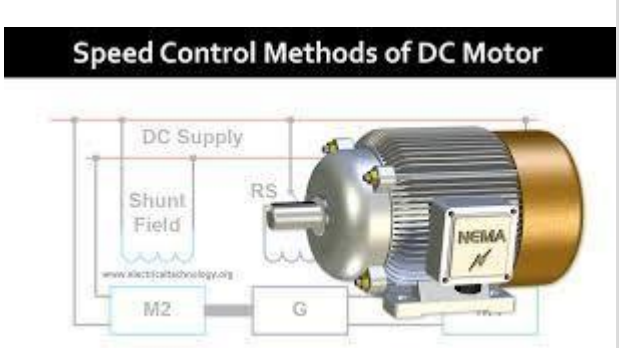


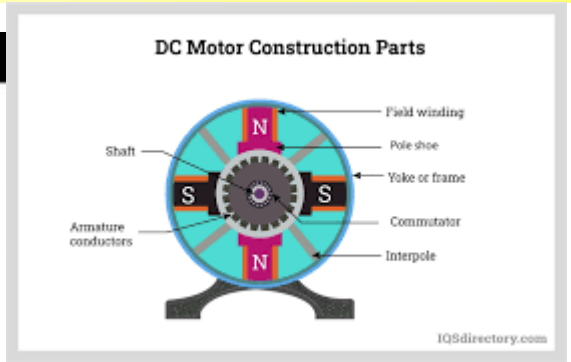


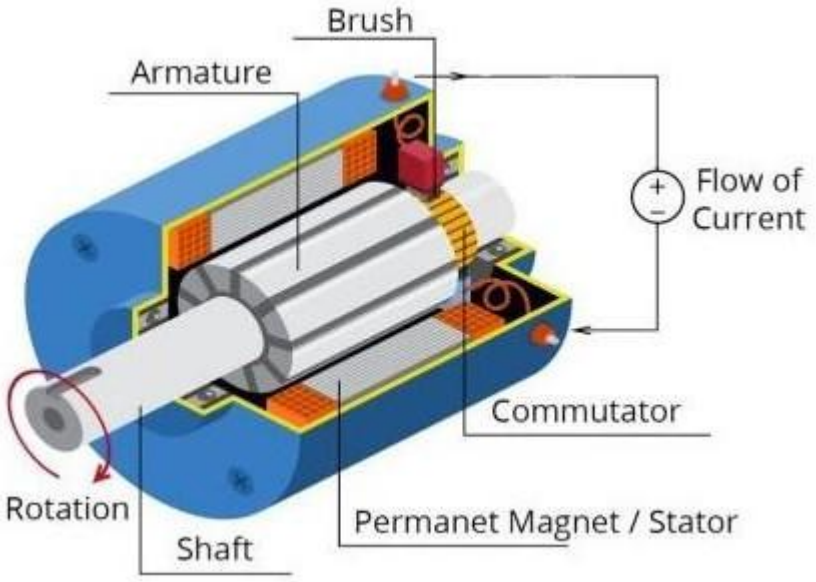


3RD CHAPTER-D. C. MOTORS

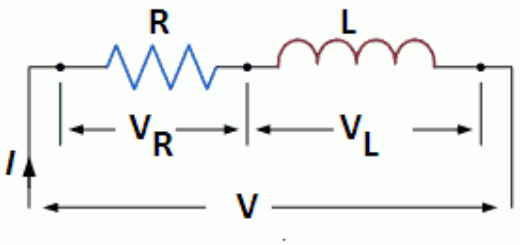






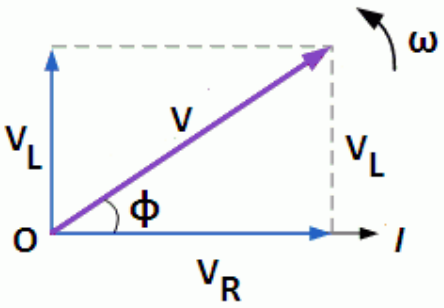


4TH CHAPTER-AC CIRCUITS



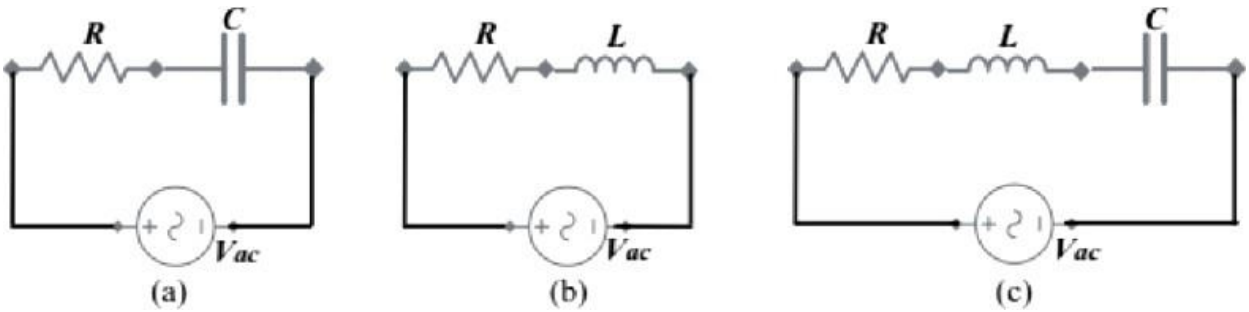
$$V = \sqrt{(IR)^2 + (IX_L)^2}$$

$$I = \frac{V}{\sqrt{(R)^2 + (X_L)^2}} = \frac{V}{Z}$$



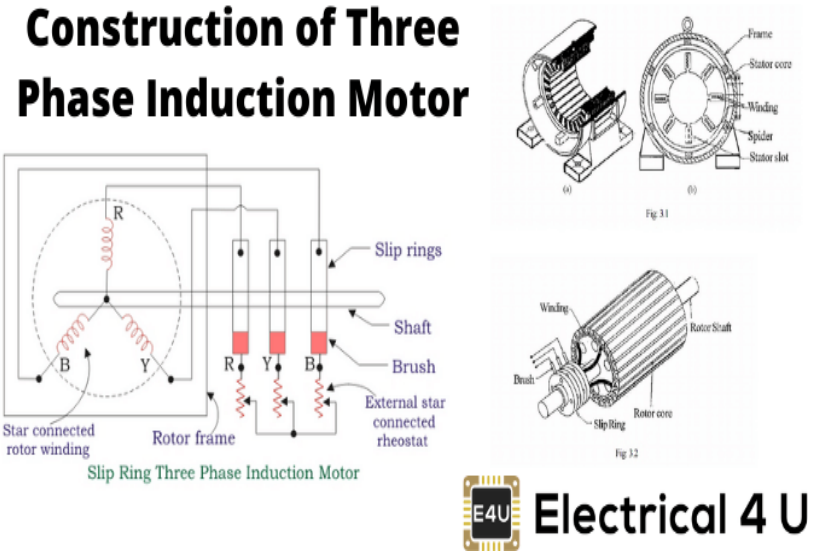
where $Z = \sqrt{(R)^2 + (X_L)^2}$ is called impedance

$\phi = \tan^{-1}\frac{X_L}{R}$ Power, P = VI cos φ

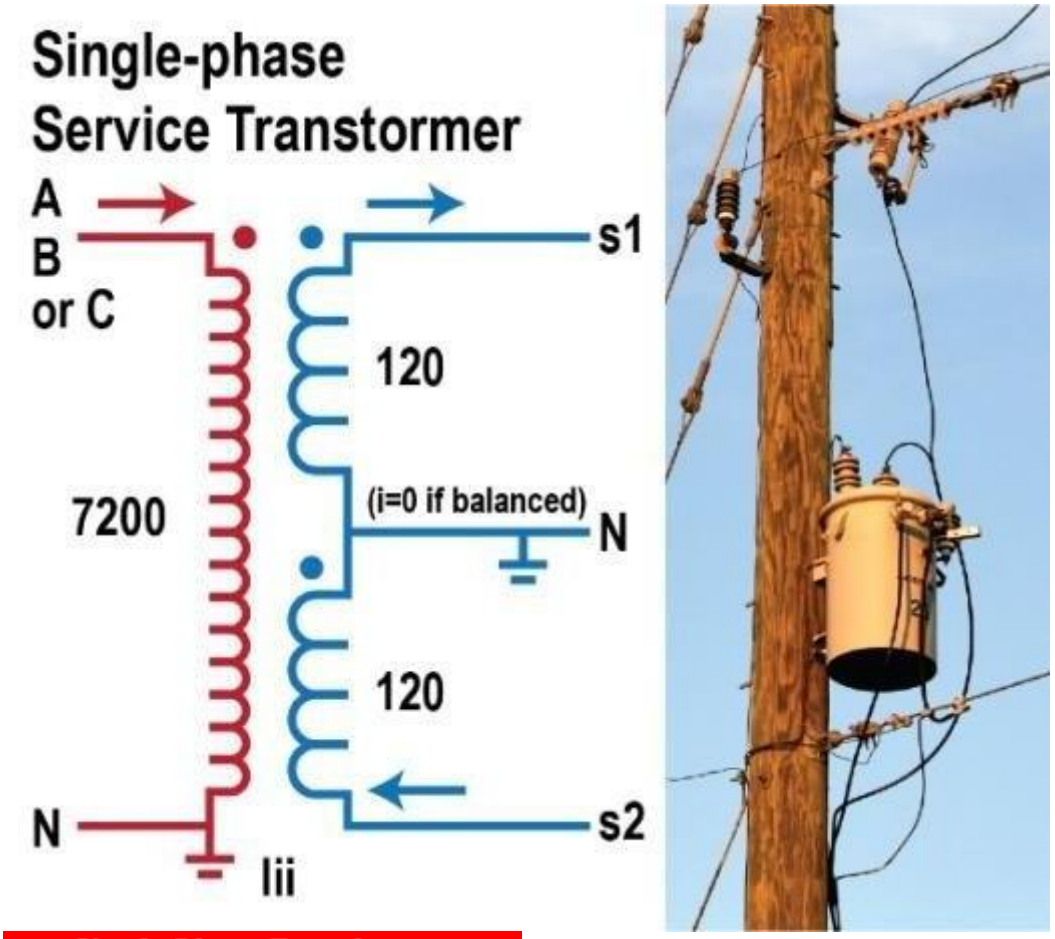


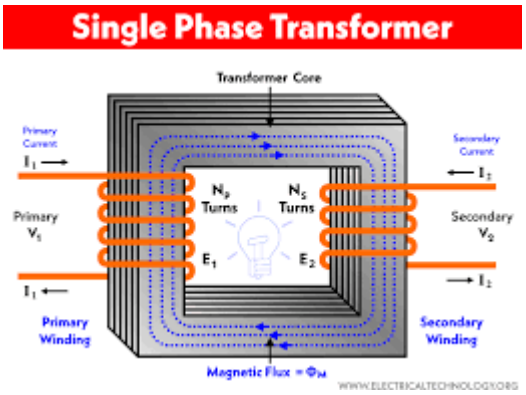
5TH CHAPTER-SINGLE PHASE TRANSFORMER

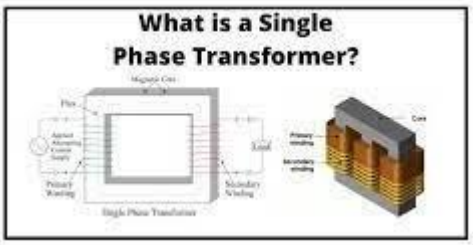
6TH CHAPTER- T H R EE P H A S E I N D U C T IO N M O TO R S



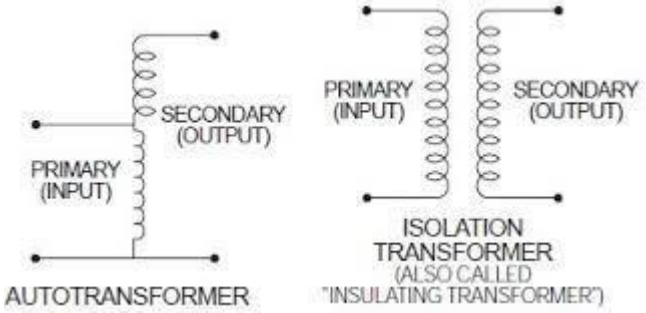
7TH CHAPTER- S I N G L E PH A S E I N D U C T IO N M O TO R S



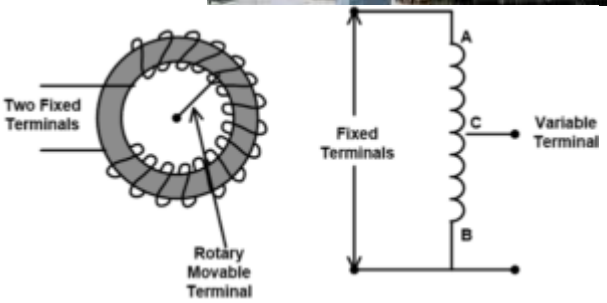




AUTO TRANSFORMER

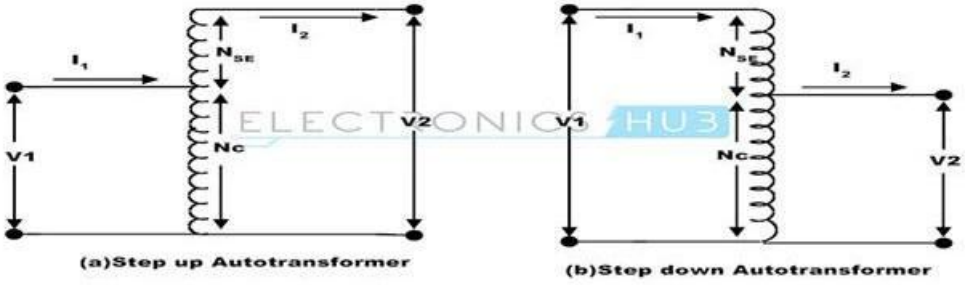


3a-single-phase-variable-autotransform

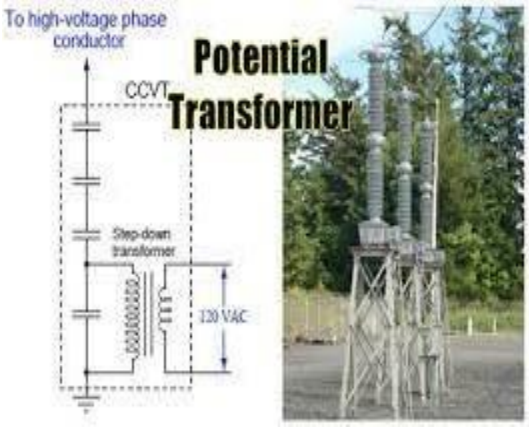


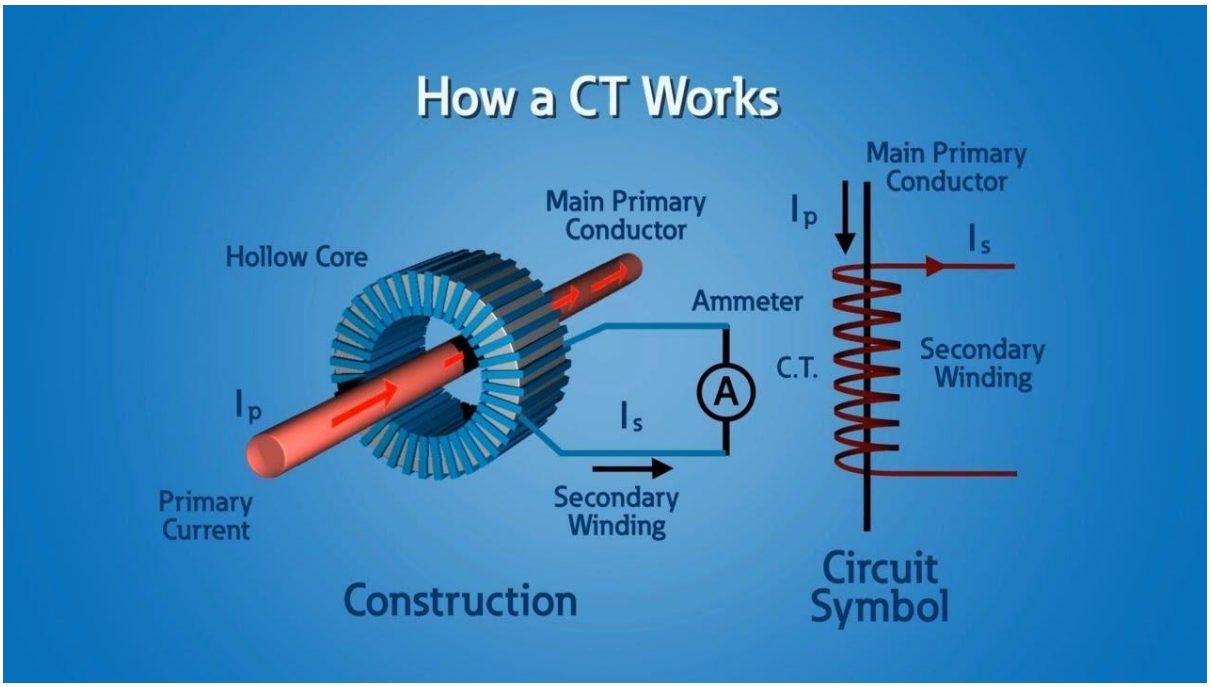
WHAT IS AUTOTRANSFORMER?

Types, Starting, Efficiency, Applications

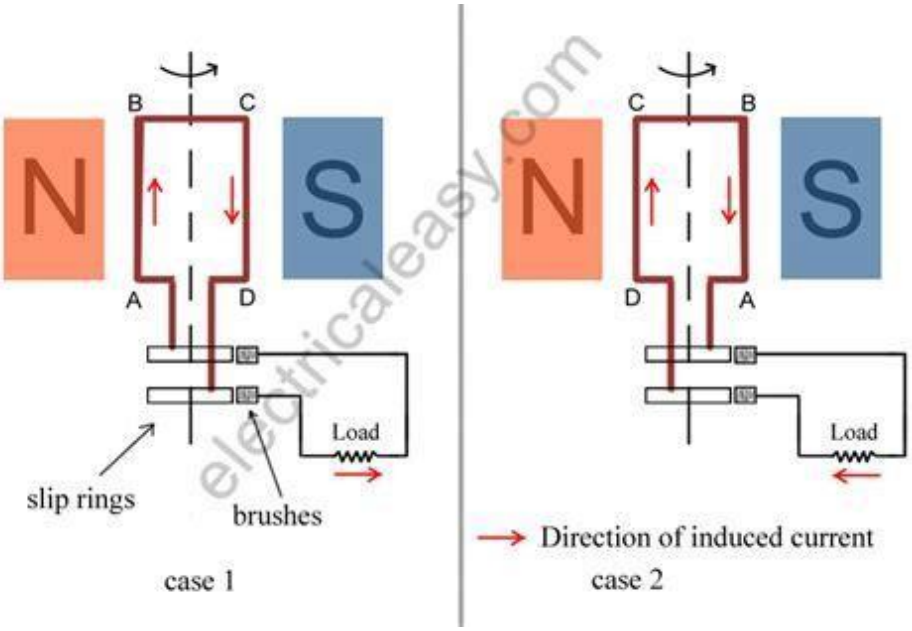


INSTRUMENT TRANSFORMERS

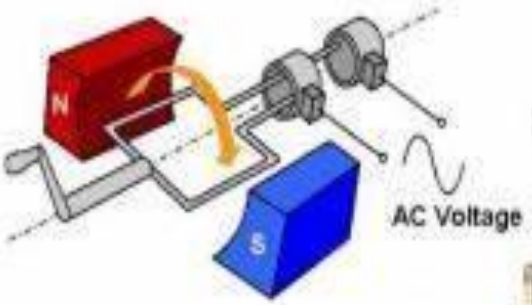


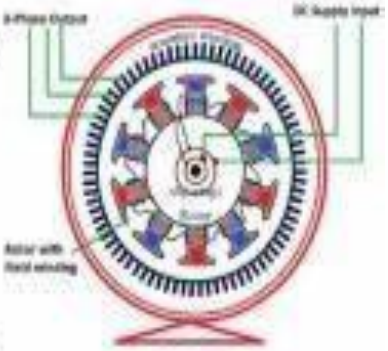


8TH CHAPTER-A L T ERN A TO R

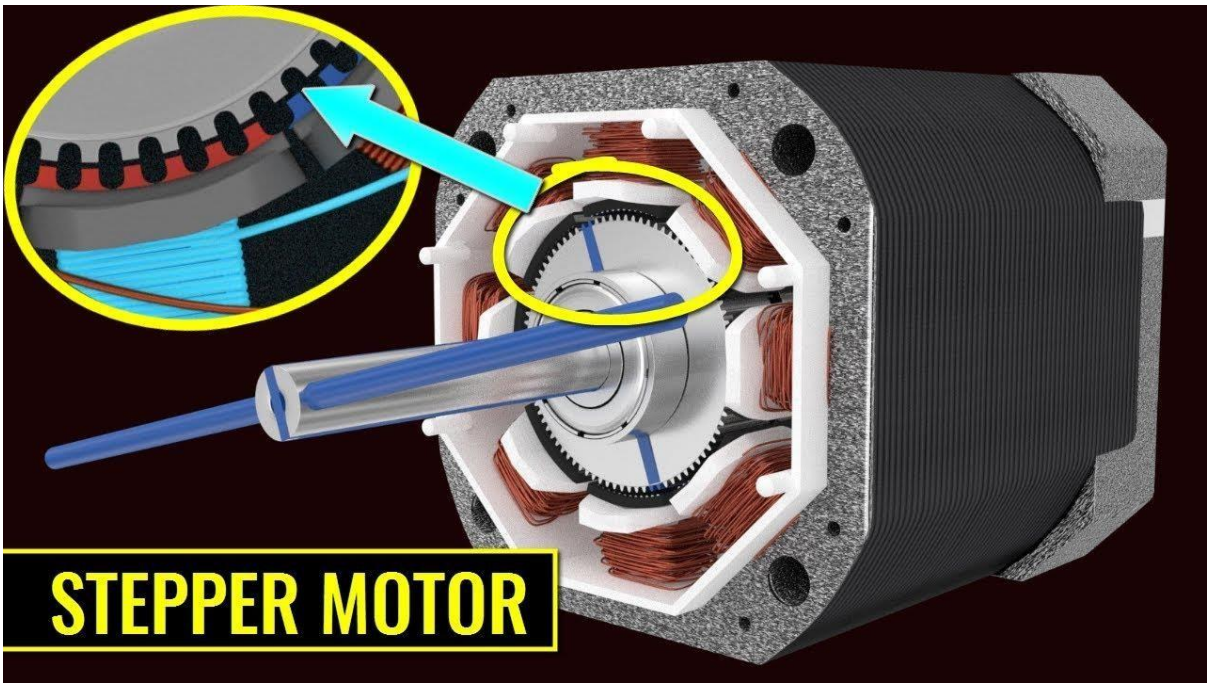


What is the Working Principle of Alternator?





Electrical 4 U


STEPPER MOTOR