IMPORTANT FORMULAE

Formula	Symbols	Application
1. $\varepsilon = \frac{d\phi}{dt}$	ε = induced emf.	Faraday's law of electromagnetic induction
2. $\varepsilon = -Blv$	B = magnetic field, V = Velocity, l = length of the metal rod	Motional emf
3. $V = \frac{1}{2}B\omega l^2$	V = emf developed between the ends of the rod, ω = angular velocity, l = length of the rod	To find emf developed between the end of the rod rotating in the magnetic field
4. $\phi = LI$	ϕ = Magnetic flux, L = Self-Inductance of the coil	Relation between ϕ and L
5. $\varepsilon = -L\frac{dI}{dt}$	L = Self-Inductance of the coil	To find self-induced emf in a coil
6. $\varepsilon_1 = -M_{12}\frac{dI_2}{dt}$	M_{12} = Coefficient of mutual inductance, $\frac{dI_2}{dt}$ = Rate of change of current in the secondary coil	Self-induced of a solenoid
7. $L = \mu_r\mu_0 n^2 Al$	μ_r = Relative permeability, μ_0 = permeability of free space	Self-inductance of a long solenoid
8. $e = nBA\omega\sin\omega t \quad (\omega = 2\pi v)$	n = no. of turns of the coil, B = magnetic field, A = area of the coil, v = frequency of AC	Equation of a.c. generator
9. $U = \frac{1}{2}LI^2$	U = Energy stored in inductor	To find energy stored in the inductor in its magnetic field