



# ELECTRICAL ENGINEERING

## Transformer

*Hand Notes For GATE, IES, PSUs etc...*

### Hand Notes

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**Note :** We also providing IIT JEE, Advance, NEET, JEE UG, GATE, IES, PSUs & Competitive Exam Materials [Handnotes, Shortnotes & Books], All Reports [Seminar Reports & PPT]

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## **Covered Topics :**

- Transformer
- Various Types of Converters
- Type of Transformer
- Basic Principle
- EMF Equation of Single Phase Transformer
- Transformation Ratio (K)
- Efficiency
- Losses
- Practical Transformer on No Load
- Ideal Transformer on Load
- Practical Transformer on Load
- Testing on Transformer

- High Voltage DC is preferred in transmission.  $(HV\ DC) \Rightarrow \text{low } I \Rightarrow \text{Low Losses } (loss = I^2 R)$ .

# TRANSFORMER

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Principle:  $\Rightarrow$  Electromagnetic Induction.

$\Rightarrow$  static Device;  $V_1 \neq V_2$   
 $F_1 = F_2$ .

By Law of Thermodynamics:—

$$P_1 = P_2$$

$$V_1 \cdot I_1 = V_2 \cdot I_2$$

$$(230V) (250A) = (250V) (230A)$$

- $(P=VI)$  Power always remains same in Transformer.  
same Frequency Only voltage is made higher or lower.

- Energy always generated at  $\Rightarrow$  11 KV.  
(In India).

- Frequency:  $\Rightarrow$  India: 50 Hz.  
USA: 60 Hz. } AC.

\*\*\* DC  $\Rightarrow$  0 Hz.

\*\* Power Factor  $\Rightarrow$  1.

- Why there is need of High Vtg Transmission  $\Rightarrow$   
 $\Rightarrow VI \uparrow \Rightarrow I \downarrow \Rightarrow \text{Loss} \downarrow \Rightarrow \text{o/p} \uparrow \Rightarrow \eta (\text{effici}) \uparrow$

- Why we preferred HV DC over HV AC For Long transmission?

$\Rightarrow$  Bcoz, DC system, P.F. = Unity (1).

OR

It requires only two conductors.