



# SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore - 641 107

**An Autonomous Institution**

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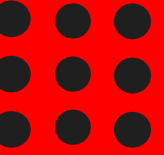
## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME : 19EE501 TRANSMISSION & DISTRIBUTION

III YEAR /V SEMESTER EEE

Unit 3 - Analysis of Transmission Lines

**Voltage Regulation & Transmission Efficiency**





# Voltage Regulation

When a transmission line is carrying current, there is a voltage drop in the line due to resistance and inductance of the line. The result is that receiving end voltage ( $V_R$ ) of the line is generally less than the sending end voltage ( $V_S$ ). This voltage drop ( $V_S - V_R$ ) in the line is expressed as a percentage of receiving end voltage  $V_R$  and is called voltage regulation

The difference in voltage at the receiving end of a transmission line \*\*between conditions of no load and full load is called voltage regulation and is expressed as a percentage of the receiving end voltage.

$$\% \text{ age Voltage regulation} = \frac{V_S - V_R}{V_R} \times 100$$



# Transmission efficiency.

. The power obtained at the receiving end of a transmission line is generally less than the sending end power due to losses in the line resistance.

The ratio of receiving end power to the sending end power of a transmission line is known as the transmission efficiency of the line

$$\begin{aligned}\% \text{ age Transmission efficiency, } \eta_T &= \frac{\text{Receiving end power}}{\text{Sending end power}} \times 100 \\ &= \frac{V_R I_R \cos \phi_R}{V_S I_S \cos \phi_S} \times 100\end{aligned}$$



# REFERENCES

- Wadhwa, C.L., “Electrical Power Systems”, New Age International Publishers Ltd., New Delhi, 7<sup>th</sup> Edition, 2017.
- Kothari D. P., Nagrath I. J., “Modern Power System Analysis”, McGraw Hill India Limited, New Delhi, 4<sup>th</sup> Edition 2011.
- Mehta, V.K., Rohit Mehta, “Principles of Power Systems”, S.Chand& Company Private Limited, New Delhi, 4<sup>th</sup> Revised Edition, 2011.
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- Uppal, S.L., Rao, S., “Electrical Power”, Khanna Publishers Limited, New Delhi, 15<sup>th</sup> Edition, 2014.

## THANK YOU