EES-702: HVDC Transmission

Credit	L	T	P
4	**3**	**1**	**-**

UNIT-I
Introduction of DC Power transmission technology – Comparison of AC and DCtransmission – Application of DC transmission – Description of DC transmission system – Planning for HVDC transmission – Modern trends in DC transmission

UNIT–II
Pulse number – Choice of converter configuration – Simplified analysis of Graetz circuit– Converter bridge characteristics – Characteristics of a twelve pulse converter –Detailed analysis of converters.

UNIT-III
General – Required regulation – Inverter compounding – Uncompounded inverter –Rectifier compounding – Transmission characteristics with the rectifier and inverter compounding – Communication link – Current regulation from the inverter side –Transformer tap changing.

UNIT-IV
Introduction – Generation of harmonics – Design of AC filters and DC filters –Interference with neighboring communication lines.

UNIT–V
Introduction of DC cables – Basic physical phenomenon arising in DC insulation –Practical dielectrics – Dielectric stress consideration – Economics of DC cables compared with AC cables. Introduction to system simulation – Philosophy and tools –HVDC system simulation – Modeling of HVDC systems for digital dynamic simulation.

Additional topics:
Matlab (Simulink) based problem solving procedures.

TEXT/REFFERENCE BOOKS
1. Padiyar, K. R., “HVDC power transmission system”, Wiley Eastern Limited, New
2. Delhi 1990. First edition.
3. Edward Wilson Kimbark, “Direct Current Transmission”, Vol. I, Wiley interscience,
4. New York, London, Sydney, 1971.
5. Colin Adamson and Hingorani N G, “High Voltage Direct Current Power
6. Transmission”, Garraway Limited, London, 1960.
7. Arrillaga, J., “High Voltage Direct Current Transmission”, Peter Pregrinus, London,
8. 1983.
9. Rakosh Das Begamudre, “Extra High Voltage AC Transmission Engineering”, New
10. Age Interantional (P) Ltd., New Delhi, 1990.

Websites:
www.nptel.ac.in