POWER GENERATION ECONOMICS
EE-704C
Credit: 3
Contact: 3L

Module 1
Economics of Generation :
Cost of power generation- Thermal, Hydro and Nuclear. Types of Consumers in a distribution system- Domestic, Commercial, Industrial etc. Concept of load factor, plant capacity factor, plant use factor, diversity factor, demand factor. Choice of size and number of generation units. [07]

Module 2
Tariff-:
Block rate, flat rate, two part, maximum demand, Power factor and three part tariffs.
Subsidization and Cross subsidization. Availability tariff of generation companies. Pool tariff of transmission companies. Availability based tariff (ABT). [08]

Module 3
Unit Commitment:
Constraints in Unit Commitment, Spinning reserve, Thermal unit constraints, Hydro constraints, Must run, Fuel constraints. Unit commitment solution methods, [07]

Module 4
Economic Dispatch:
Transmission loss formulae and its application in economic load scheduling.
Computational methods in economic load scheduling. Active and reactive power optimization. [10]

Module 5
State Estimation and load forecasting in power system:
Introduction, state estimation methods, concept of load forecasting, load forecasting technique and application in power system. [08]

Numerical problems to be solved in the class.

Text Books:
1. Economic operation of Power System, L.K. Kirchmayar John Wiely, Newyork.
2. Power system Analysis, operation & control, Chakrabarty & Haldar, 2nd edition, PHI.3. Modern power system analysis, D.P. Kothari & I.J. Nagtrath, Tata McGraw Hill.

References:
1. Power generation operation & control, A.J. Wood & B.F. Wollenberg, Wiley India.
2. Operation and control in power system, P.S.R. Murthy, BSP Publication.