

4/4 B.Tech. FIRST SEMESTER

EE7T6C POWER SYSTEM DEREGULATION (ELECTIVE II)

Credits: 4

Lecture: 4 periods/week

Internal assessment: 30 marks

Tutorial: 1 period /week

Semester end examination: 70 marks

Objectives:

The topic gives an understanding about uncoordinated regulatory and engineering policies-investment swings -guidance and tools for fixing broken markets. Analysis of bilateral and pool markets, need for deregulation, new electricity structure.

Learning Outcomes :

1. Student mainly understands the evolution of deregulation and the current situation around the world.
2. Also he understands about the electricity pricing, role of ISO and Electricity regulation act

Unit –I

Deregulation, Reconfiguring Power systems-different entities in deregulated electricity markets, Background to deregulation and the current situation around the world, benefits from a competitive electricity market after effects of deregulation

Unit –II

Role of the independent system operator, Operational planning activities of ISO: ISO in Pool markets,ISO in Bilateral markets, Operational planning activities of a GENCO: Genco in Pool and Bilateral markets

Unit –III

Attributes of a perfectly competitive market. The firm's supply decision under perfect competition. Imperfect competition- Monopoly, Oligopoly - Cournot model
Electricity markets under imperfect competition.

Unit –VI

electricity pricing- introduction – electricity price volatility electricity price indexes – challenges to electricity pricing – construction of forward price curves – short-time price forecasting

Unit –V

Transfer capability on oasias – definitions transfer capability issues – atc – ttc – trm – cbm calculations – methodologies to calculate atc

Unit –VI

Market power- Sources of market power Effect of market power – standard cost – transmission pricing – congestion pricing – management of inter zonal/intra zonal congestion

Unit –VII

The Electricity Act 2003

- a. Provisions in the generation sector
- b. Provisions in the transmission sector
- c. Provisions in the distribution sector
- d. Power trading

Unit –VIII

Ancillary Service Management- Introduction to ancillary services. Types of ancillary services.
Classification of ancillary services

Reference Books :

1. K. Bhattacharya, MHT Bollen and J.C Doolder, “Operation of Restructured Power Systems”, Kluwer Academic Publishers, USA, 2001.
2. Lei Lee Lai, “Power System restructuring and deregulation”, John Wiley and Sons, UK. 2001.
3. Fred I Denny and David E. Dismukes “Power System Operations and Electricity Markets”, CRC Press, LLC, 2002.
4. Mohammad Shahidehpour, and Muwaffaq Alomoush, - “Restructured electrical Power systems” Marcel Dekker, Inc. 2001