

## **PS5002 POWER SYSTEM RELIABILITY**

### **DETAILED SYLLABUS**

#### **UNIT I LOAD FORECASTING**

Objectives of forecasting - Load growth patterns and their importance in planning – Load forecasting Based on discounted multiple regression technique-Weather sensitive load forecasting-Determination of annual forecasting-Use of AI in load forecasting.

#### **UNIT II GENERATION SYSTEM RELIABILITY ANALYSIS**

Probabilistic generation and load models- Determination of LOLP and expected value of demand not served –Determination of reliability of ISO and interconnected generation systems

#### **UNIT III TRANSMISSION SYSTEM RELIABILITY ANALYSIS**

Deterministic contingency analysis-probabilistic load flow-Fuzzy load flow probabilistic transmission system reliability analysis-Determination of reliability indices like LOLP and expected value of demand not served

#### **UNIT IV EXPANSION PLANNING**

Basic concepts on expansion planning-procedure followed for integrate transmission system planning, current practice in India-Capacitor placer problem in transmission system and radial distributions system.

#### **UNIT V DISTRIBUTION SYSTEM PLANNING OVERVIEW**

Introduction, sub transmission lines and distribution substations-Design primary and secondary systems-distribution system protection and coordination of protective devices.

#### **REFERENCES**

- 1 Roy Billinton & Ronald N. Allan, "Reliability Evaluation of Power Systems" Springer Publication,
- 2 R.L. Sullivan, "Power System Planning", Tata McGraw Hill Publishing Company Ltd 1977.
- 3 X. Wang & J.R. McDonald, "Modern Power System Planning", McGraw Hill Book Company 1994.
- 4 T. Gonen, "Electrical Power Distribution Engineering", McGraw Hill Book Company 1986.
- 5 B.R. Gupta, "Generation of Electrical Energy", S.Chand Publications 1983.