17PS12E2 - POWER SYSTEM RELIABILLITY

Instruction/week: 4 hrs. Max. Sessional marks: 40
Univ. Exam: 3 hrs. Univ. Exam marks: 60

UNIT-I

BASIC RELIABILITY CONCEPTS: The general reliability function, the exponential distribution, Mean time to failures, series and Parallel systems, Markov Process, continuous Markov process, Recursive techniques, simple series and parallel systems models.

UNIT-II

GENERATING CAPACITY-BASIC PROBABILITY METHODS: The generation system model, Loss of load indices, capacity expansion analysis scheduled outages. Load forecast uncertainty, Forced outage rate uncertainty. Loss of energy indices. The frequency and duration method.

UNIT-III

TRANSMISSIONS SYSTEMS RELIABILITY EQUATION: Radial configurations, conditional probability approach. Network configurations state selection.

UNIT-IV

GENERATION PLANNING: Comparative economic assessment of individual generation projects. Investigation and simulation models. Heuristic and linear programming models. generator and load models.

UNIT-V

TRANSMISSION PLANNING: Deterministic contingency analysis – Probabilistic transmission system reliability analysis. Reliability calculations for single area and multi area Power systems.

DISTRIBUTION PLANNING: Network configuration design- consistency schemes- security criteria configuration synthesis.

TEXT BOOKS:

1. **"**Power system reliability Evaluation" by Roy Billinton ,Gordon and Breah, science publishers.
2. "Power System Engineering & Mathematics", by U.G.Kight ,Pergamon Press.

REFERENCES:

1. "Forecasting methods & applications" by Wheel wright and Makridakis
2. "Reliabillity evaluation of Power systems" by John Wiley Roy Bililnton and Ronald Allan Pitam ,Advanced Pub. Program, chapters 2,3,6