

(3 Hours)

Total Marks – 80

- N.B.:-** (1) Question No.1 is compulsory.
 (2) **Attempt** any **three** questions out of remaining **five** questions.
 (3) Assume necessary data wherever necessary.

- Q 1. Answer the following questions. 20
- What are different methods of Load Forecasting 5
 - What is Bathtub Curve? State its significance? 5
 - Explain Lead Time in PJM Method. 5
 - A power system has 100 identical units. Each unit has FOR of 0.05. What is the probability of finding 2 units out of service at any time? 5
- Q 2 a) Explain Long Term, Short Term and Medium Term Planning 10
- Q 2 b) Describe the role played by Load Forecaster. 10
- Q 3 a) Explain the duties of power system engineer in short term, long term and medium-term planning. 10
- Q 3 b) Consider a system containing five 40 MW unit each with a forced outage rate of 0.02. With install capacity 200MW. Consider load duration curve with peak load is 165 MW and base load is 40% of peak load. Evaluate loss of load expectation (LOLE) 10
- Q 4 a) Explain two state Markov Model and derive an expression for Availability and Unavailability. Draw state model for three units indicating all transition rates. 10
- Q 4 b) Explain frequency and duration method and compare it with LOLP (Loss of load probability) 10
- Q 5 a) Explain Individual Load Point Indices and System Load Point Indices. 10
- Q 5 b) What are Data Requirements for Composite System Reliability Evaluation? 10
- Q 6 Write Short Note on (any two) 20
- Markov Process
 - MTTF and Failure rate
 - Modified PJM Method