

(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**
- a) What are different methods of Load Forecasting **5**
- b) What is Bathtub Curve? State its significance? **5**
- c) Explain Lead Time in PJM Method. **5**
- d) 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**
- a) Markov Process
- b) MTTF and Failure rate
- c) Modified PJM Method