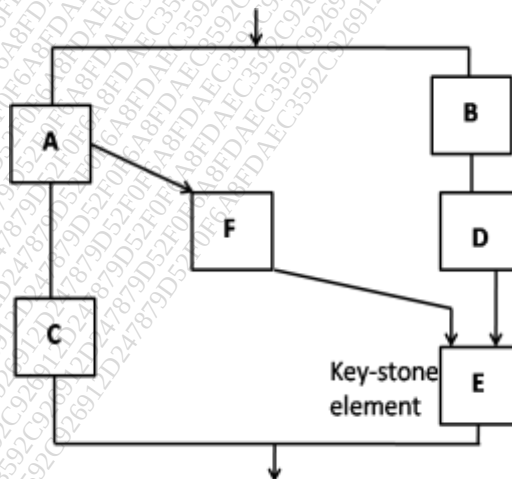


(Time: 3 Hours)

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 any four of the following questions. 20
- What do you mean by weather load model? 5
 - Write short note on DC load flow. 5
 - What do you mean by bath tub curve in reliability studies? 5
 - Obtain COPT of a generating system consisting of:
 3*10MW units with FOR of 0.01 5
 1*20MW unit with FOR of 0.01
 - Draw the Markov model used for rapid start units in operating reserve studies. 5
- Q 2 a) Explain various classifications of power system loads. 10
- Q 2 b) What do you mean by load forecasting? 10
- Q 3 a) Explain reactive power planning of power system. 10
- Q 3 b) Explain strategic planning of powers system. 10
- Q 4 a) Derive the general expression for reliability in terms of hazard rate. 10
- Q 4 b) Evaluate reliability of the given system using conditional probability method. 10
- Each component has a reliability of 0.99. Take E as the key-stone element.



- Q 5 a) A generating system consists of the following units: **10**
 1*10MW units with FOR of 0.08
 1*20MW units with FOR of 0.08
 1*30MW units with FOR of 0.08
 1*40MW units with FOR of 0.08
 Calculate LOLE for this system for a single daily peak load of 60MW.
- Q 5 b) A generating system contains 3*25MW units each with a 4% FOR and 1*30MW unit with a 5% FOR. If the peak load for a 100 day period is 75MW, what is the LOEE for this period? Assume that the appropriate load characteristic is a straight line from the 100% to the 80% points. **10**
- Q 6 a) What are the various data required for reliability evaluation of composite generation and transmission systems? **10**
- Q 6 b) Write short notes on: **10**
 Area risk curve ii) Outage replacement rate
