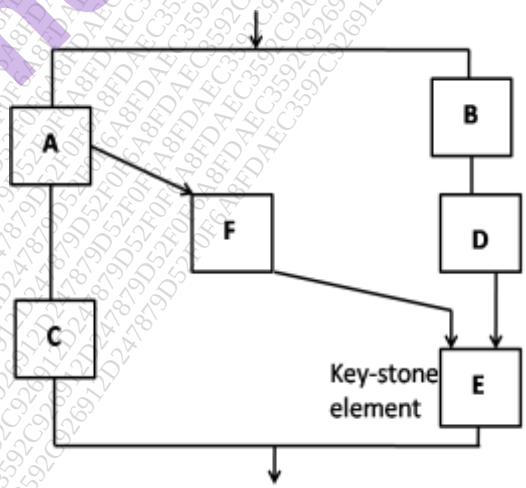
(Time: 3 Hours) **Total Marks – 80**

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

		20
Q 1.	Answer any four of the following questions.	
a)	What do you mean by weather load model?	**5**
b)	Write short note on DC load flow.	**5**
c)	What do you mean by bath tub curve in reliability studies?	**5**
d)	Obtain COPT of a generating system consisting of: 3*10MW units with FOR of 0.01 1*20MW unit with FOR of 0.01	**5**
e)	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. Each component has a reliability of 0.99. Take E as the key-stone element.	**10**



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
