(61) BE-sem-VIII -CBGS- Electrical - PSPR 30/5/16

Q.P. Code : 719601

(3 Hours) **[Total Marks: 80]**

N. B. : (1) Question No. **1** is **compulsory**.
(2) **Attempt** any **three** questions out of remaining **five** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) **Assume** suitable **data** if **necessary**.

1. Attempt any **four** :- 20
   a) State the importance of Load Forecasting.
   b) What is operating reserve? Define Outage Replacement Rate (O.R.R.)
   c) Show that M.T.T.F. is reciprocal of failure rate λ.
   d) Draw Bath Tub curve and define all three regions in it.
   e) The reliability of a component is 0.3. How many such components be connected in parallel to achieve an overall reliability of at least 0.85 ?

2. a) Explain two state Markov model and derive the expression of availability and unavailability. Draw the state space model for three units indicating all transition rates. 10
   b) Differentiate in Short term, Medium term and Long term planning. 10

3. a) What is the impact of weather on load forecasting? Explain weather load model 10
   b) What is reactive power planning? What are the methods used for reactive power planning? 10

4. a) Consider a system containing five units of 40 MW each with a forced outage rate of 0.01. Prepare the capacity outage table for the system. Find Loss of Load Expectation (LOLE) and risk factor if the peak load is 180 MW and base load is 40% of peak load. 10
   b) Derive a general expression for the unreliability of model shown in figure below and hence evaluate the unreliability of the system if all component have a reliability of 0.8. 10

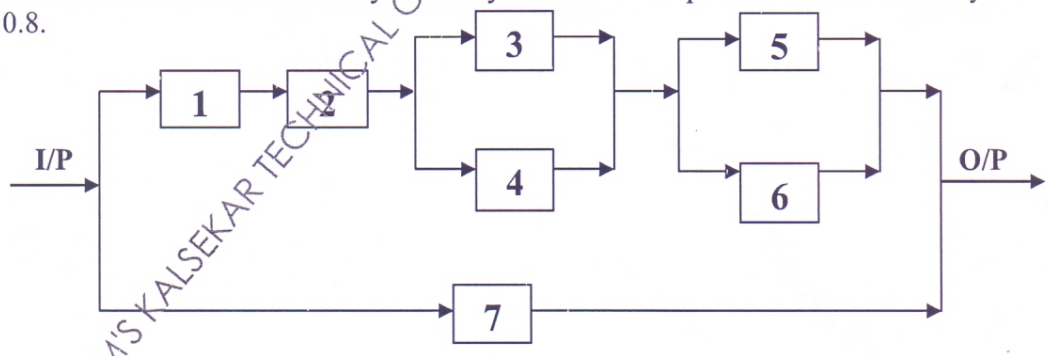

Figure for Q. 4b

TURN OVER

5. a) Explain frequency and duration method and hence explain the concept of rate of departure. 10

b) Explain modified PJM method in detail. 10

6. a) In the system shown in figure below, a system success requires that at least one of the paths, AC, BD, AED, BEC must be available. Write an expression for unreliability of this system. If all the components have a reliability of 0.99 each, what is the system reliability? 10

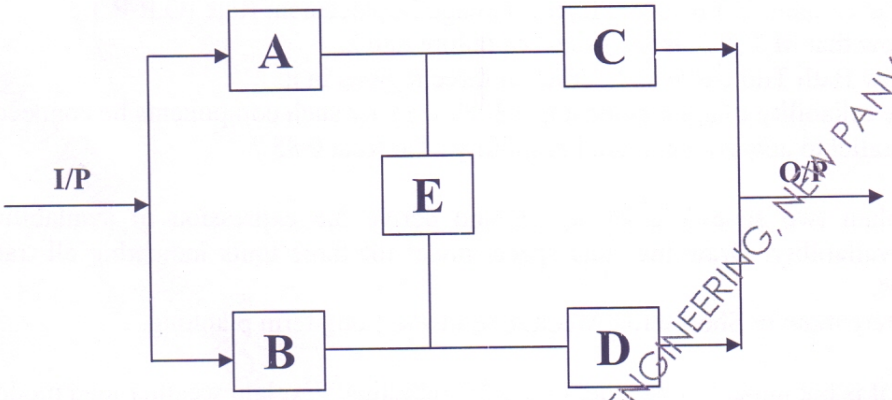

Figure for Q. 6a

b) Explain data requirement for composite system reliability evaluation. 10

Course: B.E. (SEM.-VIII) (REV. -2012) (Electrical Engg.)(PROG T4728)

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Correction

Q. NO. 4 (A)

Read As:

Consider a system ..... base load is 40% of peak load.

Annually.

Date and Time 30/05/2016 12:20 PM