

8. (a) A generator supplying a load. An incremental change in load of 6 MW requires the generation to be increased by 8.5 MW. If the incremental cost at the plant bus is Rs 300/MWh, what is the incremental cost at the receiving end ? **10**
- (b) Describe step by step method for solving the swing equation.

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B. Tech. EXAMINATION, Dec. 2017

(Seventh Semester)

(Old Scheme) (Re-appear Only)

(EE-EEE)

EE-411

**POWER SYSTEM OPERATION AND
CONTROL**

Time : 3 Hours]

[Maximum Marks : 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) Differentiate between single area and multi-area load frequency control. **10**
 (b) What is the transient stability factors influencing transient stability ? **10**
2. Draw block diagram of automatic voltage control system of an alternator. Discuss the functions of the different components of the control system. **20**
3. Differentiate between flat frequency, flat tie line load and tie line load bias control methods for load frequency control of two area systems. **20**
4. (a) Define the critical clearing angle, and state equal area criterion. **10**
 (b) Discuss effect of fault clearing time on transient stability. **10**
5. (a) What are the advantages of static excitation system ? Discuss the main features of such a system giving a neat diagram. **10**

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- (b) What is the steady state stability ? State the assumption made in stability studies. **10**

6. In a system with two plants the incremental cost of fuel costs are given by $0.01P_{g1} + 20Rs/MWh = \frac{dF1}{dP_{g1}}$; $0.015P_{g2} +$

$22.5Rs/MWh = \frac{dF2}{dP_{g2}}$. The system is running under optimal schedule with $P_{G1} = P_{G2} = 100$ MW. If $\frac{\partial P_{loss}}{\partial P_{G2}} = 0.22$, find the plant

penalty factors and $\frac{\partial P_{loss}}{\partial P_{G1}}$. **20**

7. (a) Classify various types of excitation system. Draw the schematic and explain the brushless excitation scheme. **13**
 (b) How generator limits do affects the schedule ? **7**

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