



8. Derive the transmission loss Formula useful for economic dispatch.

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Roll No. ....

**G-23**

**B. Tech. EXAMINATION, May 2017**

(Seventh Semester)

(B. Scheme) (Re-appear Only)

EE

EE-407-B

POWER SYSTEM OPERATION AND CONTROL

*Time : 3 Hours]*

*[Maximum Marks : 75*

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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.

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**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

### Unit I

1. Develop the complete block diagram mode of isolated load frequency control system and perform steady state analysis for unit step change in input power.
2. What is meant by Dead Band ? Explain digital load flow control.

### Unit II

3. Draw the schematic diagram of the static excitation scheme and explain it. Draw block diagram model of Type-1 Excitation system and develop the stat space model for it.
4. What are the various types of excitation systems ? Draw the neat sketch of Brushless excitation system and describe it.

### Unit III

5. Define the Voltage stability and voltage collapse. Describe in brief the techniques for prevention of voltage collapse.

6. A synchronous motor connected to an infinite bus bar is driving a load corresponding to its rated capacity, with a torque angle of  $30^\circ$ . If the load is suddenly increased to times the rated load, determine whether or not the drive is stable. Calculate the maximum additional load that can be thrown suddenly on the shaft of the motor without affecting the stability of the drive.

### Unit IV

7. Two power plants are connected together by a transmission line and load is at powerplant 2 as shown in figure 1 below. When 100 MW are transmitted from plant 1, the transmission loss is 10 MW. The incremental fuel cost characteristics of plant 1 and two are given by :

$$\frac{dC_1}{dPG_1} = 13 + 0.1 PG_1 \text{ Rs. Per MWh}$$

$$\frac{dC_2}{dPG_2} = 12 + 0.12 PG_1 \text{ Rs. Per MWh}$$