BE. Electrical VII CBGS
Power Syst. Opn & Control. 24.11.16

76

Q.P. Code : 628000

3 Hours **Total Marks: 80**

Note: 1. **Q. 1 is compulsory.**
2. Solve any **3** questions out of remaining questions.
3. Assume suitable data if necessary.

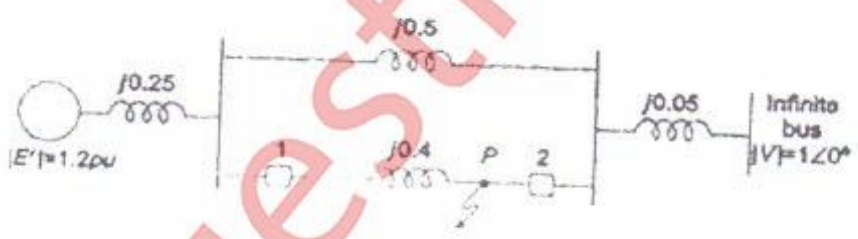
Q1. Answer all questions - [20]

a. Write notes on Y_{BUS} matrix formation by singular transformation method.
b. Explain how equal area criteria can be used for stability analysis.
c. Draw input-output curve and IFC curve of a generation unit.
d. Explain diversity interchange.

Q2. a. Draw and explain importance of P-V & V-Q curve. [10]

b. Derive Exact coordinate equation for optimal generation scheduling. [10]

Q3. a. A three-phase fault is applied at the point P (at the end of one of the parallel line) as shown in figure. Fault is cleared by simultaneous opening of the breakers 1 and 2. The reactance values of various components are indicated on the diagram. The generator is delivering 1.0 pu power at the instant preceding the fault. Find the critical clearing angle for clearing the fault. [10]



b. Compare GS and NR and Fast decoupled methods for load flow analysis. [10]

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Q4. a. For two area load frequency control obtain incremental tie line power equation and draw its block diagram representation. [10]

b. Explain how voltage can be controlled using shunt and series compensation. [10]

Q5. a. Write steps involved on Gauss Seidel method for load flow analysis of a three bus system in which two buses are PQ bus and one bus is connected with a generator.

b. Explain step by step method for solution of swing equation [10]

Q6. a. Incremental fuel costs in rupees per MWh for a plant consisting of two units are:

$$\frac{dC_1}{dP_{G1}} = 0.2\,P_{G1} + 40 \;\; ; \;\; \frac{dC_2}{dP_{G2}} = 0.4\,P_{G2} + 30$$

Assume that both units are operating at all times, and total load varies from 40MW to 250 MW, and the maximum and minimum loads on each unit are to be 125 MW and 20 MW, respectively. How will the load be shared between the two units as the system load varies over the full range. [10]

b. Explain proportional and integral line frequency control. [10]