

**B. Tech. 5th Semester (EE) F. Scheme Examination,**

**December-2017**

**POWER SYSTEM-I**

**Paper-EE-315-F**

*Time allowed : 3 hours]*

*[Maximum marks : 100*

**Note :** *Student will have to attempt five question in all.*

*Q. No. 1 is compulsory and attempt one question from each section.*

1. (a) Write short note on Representation of load in Power System. 5
- (b) Write short note on importance of load flow analysis in Power System. 5
- (c) Write short note on Reliability Consideration in Power System. 5
- (d) Write short note on Control Area in LFC. 5

**Section-A**

2. Explain working of power transformer and also explain efficiency, Regulation and losses in Power Transformer. 20
3. Three generators are rated as follows :  
Generator 1 – 100 MVA, 33 kV, reactance 10%  
Generator 2 – 150 MVA, 32 kV, reactance 8%  
Generator 3 – 110 MVA, 30 kV, reactance 12%

Determine the reactance of the generator corresponding to base value of 200 MVA, 35 kV. 20

### Section-B

4. Draw flow chart of Newton-Raphson Method and explain its algorithm in detail. 20
5. Explain control of voltage profile in detail. 20

### Section-C

6. Incremental Fuel Cost in Rupees per MWh for a plant consisting of two units are :

$$\frac{dC_1}{dP_{G1}} = 0.20 P_{G1} + 40$$

$$\frac{dC_2}{dP_{G2}} = 0.40 P_{G2} + 30$$

Generator limits are as follows :

$$30 \text{ MW} \leq P_{G1} \leq 175 \text{ MW}$$

$$20 \text{ MW} \leq P_{G2} \leq 125 \text{ MW}$$

Assume that both units are operating at all times. How will the load shared between the two units as the system load varies over the full range of the load value ? What are the corresponding values of the plant incremental cost ? 20

7. Explain optimal generation scheduling in detail. 20

### Section-D

8. Explain Two-Area Load frequency control in detail. 20
9. Write short note on :
  - (a) Economic dispatch control
  - (b) Automatic voltage control. 20

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