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M.TECH

Total Number of Pages : 2

M.TECH 1ST SEMESTER SUPPLE EXAMINATIONS, DECEMBER 2018

ADVANCED POWER SYSTEMS

Branch: PE, Subject Code:MPEPC1020

(Regulations 2017)

Time: 3 Hours

Max Marks : 70

Question Code: SD18002025

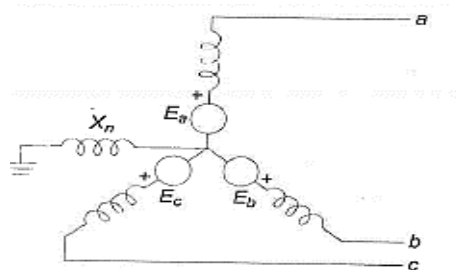
PART-A (10 X 2=20 Marks)

1. Answer the following questions.
 - a. Mention the types of sag
 - b. State the role of independent system operator (ISO) in open access and pool type power markets.
 - c. What is called available transfer capability?
 - d. What are the major three types of problems disturbs the power quality?
 - e. How fault clearing time is reduced?
 - f. Mention factors affecting load forecasting methods
 - g. What is called available transfer capability?
 - h. Define load factor.
 - i. What is the purpose of optimal power flow program?
 - j. Define impulsive transients. Give example for impulsive transient over voltages

PART-B (5 X 10=50 Marks)

Answer any five questions from the following.

2. a) State and explain the trending and mixed load forecasting methods [5]
 b) Explain the dynamic analysis in frequency domain for single area system [5]
3. a) Explain the dynamic analysis in frequency domain for single area system [5]
 b) The cost characteristic of two units in a plant are: [5]
 $C_1 = 0.4 P_1^2 + 160 P_1 + K_1$ Rs./h [5]
 $C_2 = 0.45 P_2^2 + 120 P_2 + K_2$ Rs. / h
 Where P_1 and P_2 are power output in MW. Find the optimum load allocation between the two units, when the total load is 162.5 MW. What will be the daily loss if the units are loaded equally?
4. a) Explain Voltage Unbalance and Waveform Distortion [5]
 b) Explain power quality measurement system. What are the characteristic of power quality measurement equipment's? [5]
5. a) Figure below shows a synchronous generator whose neutral is grounded through a reactance X_n . The generator has balanced emfs and sequence reactances X_1, X_2 , and X_0 such that $X_1 = X_2 > X_0$. [5]



- a) Draw the sequence networks of the generator as seen from the terminals [5]
- b) Define voltage flicker. Discuss some of the flicker sources. Write notes on common methods for mitigation of flicker



6. a) Explain the Load frequency Scheme of two area system [5]
b) List the various effects of equipment's due to harmonics. Explain briefly [5]

7. a) State and explain the constraints in Unit- commitment [5]
b) A power plant has three units with the following cost characteristics [5]

$$C_1 = 0.5P_1^2 + 215P_1 + 5000 \text{ Rs/hr}$$

$$C_2 = 1.0P_2^2 + 270P_2 + 5000 \text{ Rs/hr}$$

$$C_3 = 0.7P_3^3 + 160P_3 + 9000 \text{ Rs/hr}$$

Where P_1 are the generating powers in MW. The maximum and minimum loads allowable on each unit are 150 and 39 MW. Find the economic scheduling for a total load of 320 MW

8. Write Short notes on the following [5]
a) types of sag [5]
b) Multi-area power interchanges of Power pools [5]

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