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10EE831

Eighth Semester B.E. Degree Examination, June/July 2018
Reactive Power Management

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. What is importance of reactive power in a power system? List the reactive power devices. (04 Marks)
b. What are the objectives of load compensation? Explain. (08 Marks)
c. What are the parameters and factors need to be considered while specifying a load compensator. (08 Marks)
- 2 a. Explain the power factor correction in a single phase system. (10 Marks)
b. Discuss the load compensation using symmetrical components. (10 Marks)
- 3 a. Explain the fundamental requirement in AC power transmission. (08 Marks)
b. Derive the expression for fundamental transmission line. (06 Marks)
c. Discuss the effect of line length, power and power factor on voltage and reactive power on con compensated line under load. (06 Marks)
- 4 a. Distinguish between passive and active compensators. (06 Marks)
b. Explain uniformly distributed compensation. (06 Marks)
c. Explain how to calculate the reactance of synchronous reactor to control the open circuit voltage. (08 Marks)

PART – B

- 5 a. What is series compensation? Mention practical limitations of series compensators. (05 Marks)
b. Obtain the expression for power transfer in symmetrical line with midpoint series capacitors and shunt reactors. (09 Marks)
c. Write a note on compensation by sectioning. (06 Marks)
- 6 a. With waveforms, explain the operation of the thyristor controlled reactor. (10 Marks)
b. Discuss the series capacitor protection using i) varistor protective gear ii) reinsertion scheme. (10 Marks)
- 7 a. What is synchronous condenser? Explain the emergency reactive power by synchronous condenser. (06 Marks)
b. Explain the following starting methods of synchronous condenser.
i) Reduced voltage starting ii) Static starting. (14 Marks)
- 8 a. Explain resonance due to shunt capacitor in power systems. (08 Marks)
b. What are the transient benefits of reactive power dispatching in an electric utility. (06 Marks)
c. Write a note on telephone interference due to harmonics. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

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