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Eighth Semester B.E. Degree Examination, June/July 2016
Reactive Power Management

Time: 3 hrs.

Max. Marks: 100

Note: *Answer FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1 a. Mention few typical loads that require reactive power compensation. (05 Marks)
  b. Define an ideal compensator and mention its function. (05 Marks)
  c. What is the requirement of load compensation and what are the main objectives of load compensation? (10 Marks)

2 a. Explain the working of load compensator as power factor corrector and load balance and obtain expression for the compensating susceptance in terms of the load admittance values. (10 Marks)
  b. Show that a purely reactive compensator cannot maintain both constant voltage and unity p.f it the same time in 1ϕ system. (10 Marks)

3 a. Sketch the voltage and current profiles for an uncompensated radial line on open circuit. Obtain the necessary equations. (10 Marks)
  b. What are the advantages and disadvantages of different types of compensating equipment for transmission system? (10 Marks)

4 a. Explain the use of multiple shunt reactors for the control of open-circuit voltage. (10 Marks)
  b. Explain the control of open-circuit voltage with shunt reactions and draw the voltage and current profiles. (10 Marks)

PART – B

5 a. What are the objectives and practical limitation of services compensation? (10 Marks)
  b. Analyze the performance of a symmetrical line on load compensated by midpoint series capacitor and shunt reactor. (10 Marks)

6 a. Explain the principle of operation and switching transients of thyristorised switched capacitors. (10 Marks)
  b. Mention various reinsertion schemes of series capacitor and explain series capacitor protection using varistor. (10 Marks)

7 a. Explain the condenser operation for emergency voltage control application. (10 Marks)
  b. With the help of necessary diagrams explain the reduced voltage starting and static starting of synchronous. (10 Marks)

8 a. Explain in detail the transmission benefits of reactive power management. (10 Marks)
  b. Discuss the various sources of harmonies and its effects in power system. (10 Marks)

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