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P.E.S. College of Engineering, Mandya - 571 401
 (An Autonomous Institution affiliated to VTU, Belgaum)
Eighth Semester, B.E. - Electrical and Electronics Engineering
Semester End Examination; June -2016
Flexible AC Transmission Systems

Time: 3 hrs

Max. Marks: 100

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

PART - A

1. a. Explain the importance of transmission Interconnections. 6
- b. Explain the flow of power in an ac system considering : 14
 - i) Power flow in parallel paths
 - ii) Power flow in a meshed system.
- 2 a. Mention the relative importance of controllable parameters and their impact on active and reactive power control in a transmission line. 8
- b. With neat diagrams, explain four categories of FACTS controllers. 12
- 3 a. With a help of neat sketches, explain the operation of single phase, full wave voltage source converter. 12
- b. Explain the basic concepts of Voltage source converter. 8
- 4 a. With a neat circuit diagram and relevant wave forms, explain the operation of a three phase full wave diode rectifier. Derive the equation for output dc voltage V_d . 10
- b. Explain the operation of thyristor based three phase current source Inverter. Draw its relevant waveforms. 10

PART - B

- 5 a. What are the objectives of shunt compensation? Why the midpoint of single line system is the best location for shunt compensation? 8
- b. With neat sketches of waveforms, explain the principle of power oscillation damping by STATCOM shunt compensated lines. 12
- 6 a. Explain the applications of series capacitor coated in power oscillation damping and sub synchronous oscillation damping. 12
- b. Give the internal control scheme for GCSC and mention the four basic functions of the control scheme. 8
- 7 a. With a neat sketch explain the working of TCSC. Draw the waveforms and obtain the expression of $X_L(\alpha)$. 12
- b. Explain the concept the series capacitive compensation. 8
8. Write short notes on :
 - i) Comparison between VSC and CSC 10
 - ii) Comparison between SVC and STATCOM 10
 - iii) Basic FC-TCR type controller. 10