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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Eight Semester, B.E. - Electrical and Electronics Engineering

Semester End Examination; June/July - 2015

Flexible AC Transmission Systems

Time: 3 hrs

Max. Marks: 100

Note: i) Answer any **FIVE** full questions selecting at least **TWO** full questions from each **part**.

ii) Any missing data may be suitably assumed.

PART - A

1. a. Why we need Transmission interconnection? Explain in brief. 5
- b. With simple two machine system, show the power flow and dynamic stability considerations of a transmission interconnection, with all the relevant phasor diagrams. 10
- c. List the possible benefits from FACTS technology. 5
2. a. What are the basic types of FACTS controllers? Explain each in brief, along with their symbolic representation. 10
- b. Explain single phase full wave bridge converter operations with neat circuit diagram and waveforms. 10
3. a. Give the basic concepts of voltage sourced converter. 8
- b. Discuss a three phases, full wave diode converter neglecting commutation angle with waveforms and circuit set up. 12
4. a. Write about and clarify the current sourced converters versus voltage sourced converters. 8
- b. Explain the three principle types of current sourced converter. 6
- c. Brief out the inverter operation of thyristor based current sourced converter with relevant figures and waveforms. 6

PART - B

5. a. Enumerate the objectives of shunt compensation and discuss in detail any one. 10
- b. Write in detail about Midpoint voltage regulation for line segmentation by shunt reactive compensation. 10
6. a. Obtain the comparison between STATCOM and SVC with respect to
 - i) V - I and V - Q characteristics 10
 - ii) Transient stability
- b. Summarize the basic characteristics of the main static var generator schemes and also obtain the loss versus output characteristics. 10
7. a. Enumerate the objectives of series compensation. 6

- b. Mention the different types of series compensator and discuss in detail the important features, characteristics of any two series compensator. 14
- 8 a. Give the internal control scheme for the GCSC and mention the basic functions of the control scheme. 8
- b. Give the structure for external control of SSSC. 6
- c. Write a note on variable impedance type of series compensation. 6

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