

Code: EEPC2T2

I M.Tech - II Semester - Regular Examinations - December 2013

**FACTS CONTROLLER
(POWER SYSTEM CONTROL & AUTOMATION)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Why there is need of interconnection in power systems? What are the problems in interconnection systems? What are the factors which Limits Loading capability? Explain in detail? 7 M
- b) Derive the expression for Active and Reactive power flow in a lossless transmission line? Draw the necessary phasor diagrams? 7 M
2. With a neat schematic diagram, explain the various basic types of FACTS controllers in detail and also explain the importance of Storage devices in converter based FACTS controllers? 14 M
3. a) Give comparisons between Voltage Source Converters and Current Source Converters. 7 M
- b) What are the advantages of 12 pulse operation for Voltage Source Converters, how it is achieved by transformer connections? 7 M

4. What are the objectives of Shunt compensation? Explain how shunt compensation can improve transient stability of power system. 14 M

5. Explain about the performance of TSC, TSC-TCR, and FC-TCR in controlling Reactive power in a power system. 14 M

6. a) Explain the operation of STAT COM with an aid of block diagram. 7 M

- b) What are the advantages of slope in the dynamic characteristics of SVC? 7 M

7. Enumerate the modeling of TCSC to enhance the system transient stability. 14 M

8. Write short notes on the following:
 - d) Hybrid VAR generators 5 M
 - e) GTO Thyristor controlled Series Capacitor (GSC) 5 M
 - f) Pulse width Modulation Converter 4 M