OR

Code No. OR11/PID

JAWAHARLAL NEHRU TECHNOLOGY UNIVERSITY, HYDERABAD

M .Tech. I Semester Supplementary Examinations, March – 2009

FACTS CONTROLLERS & THEIR APPLICATIONS

(Electrical Power Systems)

Time: 3 hours **Max. Marks.60**

Answer any Five questions

All questions carry equal marks

1.a) What is a FACTS controllers? Mention the different types of FACTS Controllers.
b) Explain with the help of neat diagram, the principle of operation of TCR and its characteristics.

2.a) What is a static VAR compensator? Classify different types of Static VAR compensators.
b) Compare between SVC and STATCOM with respect to V-I and V-Q characteristics.

3.a) Explain how real power flow and voltage stability limit in a transmission line can be improved by series compensation?
b) Discuss the principle of operation and working of a GTO Thyristor controlled series capacitor. Explain with a neat diagram.

4. Explain the necessity of series compensation from the view point of:
(a) Capability to provide Real Power compensation
(b) Control Range and VA Rating.
(c) Internal control.

5.a) With a neat sketch, explain the principle of operation of Thyristor controlled voltage regulator?
b) What is a Thyristor controlled phase angle regulator? Explain phase angle regulation and power flow control with respects to TCPAR?

6. Explain the basic principle of operation of unified power flow controller (UPFC) and its role in operation of a transmission line. Also draw the UPFC along with transmission line.

7. Explain the basic concept, design and operation of a Thyristor controlled braking resistor (TCBR) along with a neat sketch.

8. Write short notes on:
a) Hybrid VAR generator
b) Static synchronous series capacitor (SSSC).
