

[Time: Three Hours]**[Marks:80]**

Please check whether you have got the right question paper.

- N.B:
1. Question.No.1 is compulsory.
 2. Answer any three questions from 2 to 6.
 3. Figures in right indicate the marks.

- Q.1** Answer all questions [20]
- a) Explain basic types of phase controller.
 - b) Explain the circuit for right shunt UPQC.
 - c) Why we need transmission interconnection?
 - d) Explain basics of STATCOM.
- Q.2**
- a) Draw basic diagrams of Thyristor Switched Reactor and its associated waveform. [10]
Explain the condition for transient free waveform. [10]
 - b) Explain TCR with appropriate waveform.
- Q.3**
- a) Compare the characteristic of TCR and TSR. [10]
 - b) Explain how power oscillation dumping is controlled using shunt compensation. [10]
- Q.4**
- a) Explain how power system stability can improved using series-shunt compensation. [10]
 - b) Suggest a converter based technology to increase the transmission power in two machine system and explain its working principle. [10]
- Q.5**
- a) Write the benefits of FACTS technology. [10]
 - b) Using tap changing transformer explain basic concept of voltage and phase angle regulator. [10]
- Q.6**
- a) Draw different UPFC configuration and explain them in detail. [10]
 - b) Compare the shunt compensation using passive element and without passive elements. [10]
