

**Duration: 3hrs**

**Total Marks: 80**

**NB: 1) Question No. 1 is Compulsory.**

**2) Attempt any three Questions out of remaining five Questions.**

**3) Assume suitable data if necessary and justify the same.**

Q1. Answer the following questions

- A) State objectives of series compensator 05
- B) Explain the merits and demerits of transmission interconnections 05
- C) Explain Ideal Compensator and its conditions 05
- D) What is the flicker in power quality? 05

Q2 A) Explain the operating principle of the Thyristor Controlled Reactor (TCR) in detail 10

Q2 B) Explain switching converter type series compensation (SSSC). 10

Q3 A) Classify in detail the power filter used for harmonic elimination and explain any one with advantages and disadvantages, 10

Q3 B) Explain the capacitor-based circuit for power factor correction. 10

Q4 A) Explain various basic FACTS controllers on the basis of their connection with needful diagram. Give One example in each categories. 10

Q4 B) Explain various parameters which limit the loading capabilities of transmission line 10

Q5 A) Explain the Thyristor controlled phase angle regulator (TCPAR). 10

Q5 B) Explain the power flow in Mesh system 10

Q6 A) What is instantaneous PQ theory? 10

Q6 B) Explain power factor correction in a single phase system 10