

Duration 3 Hours

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 **all** questions

- a) Explain the merits and demerits of transmission interconnection? 05
- b) Write a short note on ideal load compensator? 05
- c) What are the objectives of shunt compensation? 05
- d) Explain the factors limit the loading capability of transmission line? 05

- Q2 a) Explain in detail with necessary diagrams the basic types of FACTS controller? 10
- b) Explain the Thyristor Controlled Reactor (TCR) in detail & condition to obtained Thyristor Switched Reactor (TSR) from TCR. 10

- Q3 a) Derive approximate formula for voltage regulation using short circuit level. 10
- b) Explain variable impedance type series compensation (TSSC). 10

- Q4 a) Explain power factor correction in a single phase system 10
- b) Explain the Thyristor Controlled Phase Angle Regulator (TCPAR). 10

- Q5 a) Explain switching converter type series compensation (SSSC). 10
- b) Explain the midpoint shunt reactor or capacitor var compensator in detail with the help of two machine system. 10

- Q6 a) Explain the shunt compensation by synchronous voltage source 10
- b) Explain the basic operating principle of Unified Power Flow Controller (UPFC) with relevant diagram. 10