

Duration – 3 Hours

Total Marks - 80

- N.B.:-** (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.

- Q 1.** Answer the following questions. **20**
- a) Explain the Load compensation, state its objectives.
 - b) Explain objectives of series compensation.
 - c) Why harmonics are represented by harmonic number and not with harmonic frequencies.
 - d) Write the advantages and disadvantages of passive filter.
- Q 2 a)** Enlist common power quality issues. Explain any five of them. **10**
- Q 2 b)** Write a note on harmonic phase rotation and phase angle relationship. **10**
- Q 3 a)** Explain effects of harmonics of rotating machines, transformers and cables. **10**
- Q 3 b)** Explain different harmonics mitigation techniques. **10**
- Q 4 a)** With the neat phasor diagram explain power factor compensation using capacitor. **10**
- Q 4 b)** With necessary diagrams explain the basic types of FACTS controller? **10**
- Q 5 a)** Explain various parameters which limit the loading capabilities of transmission line. **10**
- Q 5 b)** Explain switching converter type series compensator (SSSC). **10**
- Q 6 a)** Explain voltage and current characteristics of TCR and FCTCR. **10**
- Q 6 b)** Explain the Thyristor controlled phase angle regulator (TCPAR). **10**
