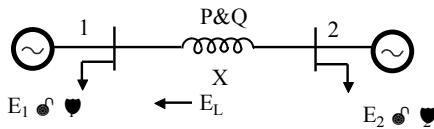


- Notes :
1. Solve Question 1 OR Questions No. 2.
 2. Solve Question 3 OR Questions No. 4.
 3. Solve Question 5 OR Questions No. 6.
 4. Solve Question 7 OR Questions No. 8.
 5. Solve Question 9 OR Questions No. 10.
 6. Solve Question 11 OR Questions No. 12.
 7. Illustrate your answers whenever necessary with the help of neat sketches.
 8. Use of non programmable calculator is permitted.

1. a) Why there is a need of transmission interconnection. **7**
- b) Write in brief about the classification of FACTS controllers. **6**

OR

2. a) For the simple system shown below, explain how the power flow can be controlled by. **7**



- i) By controlling magnitudes of E_1 & E_2
 - ii) By injection of voltage at different angles.
- b) Compare HVDC and FACTS. **6**
3. a) Explain the operation of a 3 - phase full wave bridge type voltage sourced convertor with the voltage and current waveforms. **6**
- b) Compare voltage and current sourced convertor. **7**

OR

4. a) Explain in brief about pulse width modulation converter with suitable diagrams. **6**
- b) Explain the generalized technique of harmonic elimination and voltage control. **7**
5. a) Explain the objectives of shunt compensation. **7**
- b) Explain the operation of FC-TCR type static var generator giving its V-I and loss characteristics. **7**

OR

6. a) Explain STATCOM in details with the suitable diagram. **7**
- b) Explain control scheme for VSC convertor type SATCOM. **7**

- 7.** a) Explain How power transfer capability is improved by series compensation. **6**
b) Explain GTO-thyristor controlled series controller (GCSC) and explain how it is dual of TCR. **7**

OR

- 8.** a) Explain Static Series Synchronous Converter (SSSC). **6**
b) Explain TCSC with neat sketch and waveforms. **7**
- 9.** a) Explain voltage and phase angle regulator. **6**
b) Explain Hybrid phase Angle Regulator. **7**

OR

- 10.** a) Explain how power oscillations damping is achieved using PAR. **6**
b) Explain Quadrature Boost Transformer (QBT) **7**
- 11.** a) Explain unified power flow controller. **7**
b) Explain Thyristor controlled Braking Resister. **7**

OR

- 12.** a) Explain Interline Power Flow Controller. (IPFC) **7**
b) Explain NGH - SSR Damping scheme. **7**
