

Elective II - FACTS

(3 Hours)

[Total Marks: 80]

N.B.: -

1. Question No. 1 is compulsory.
2. Solve any **three** questions out of remaining **five** questions.
3. Each question is for **20 Marks**.
4. Assume suitable data if necessary.

Q.1

- A) Explain, why we need transmission interconnection?
- B) What is load compensation? State its objective.
- C) What are the objectives of voltage & phase angle regulator?
- D) What are the objectives of shunt compensation?

Q.2

- A) Show that the sensitivity to load reactive power is $dV/dQ = - (E/S_{SC})/(1+K_r(E/S_{SC}))$.
- B) Explain the methods of controllable Var generation?

Q.3

- A) Draw & explain reactive power characteristic (V-Q) with a varying inductive load.
- B) Explain variable impedance type series compensation (TSSC).

Q.4

- A) What is meant by reactive power biasing? Explain with V-Q characteristics.
- B) Draw the ideal compensator characteristics and explain i) Knee point voltage, V_k , ii) Compensated gain, K_r , iii) Max of rated reactive power, Q_r Max and iv) Stiff system.

Q.5

- A) Explain the basic operating principle of Unified Power Flow Controller (UPFC).
- B) Explain the Thyristor Controlled Phase Angle Regulator (TCPAR).

Q.6

- A) Explain power factor correction in a single phase system.
 - B) Explain the various parameters which limit the loading capabilities of transmission line.
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