

Duration: - Three Hours

Total Marks assigned to the paper: - 100

Instructions to the candidates, if any: -

N.B.: -

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

Q.1

- A) Write a short note on ideal compensator.
- B) Explain the surge impedance compensation to obtain flat voltage profile for given loading condition.
- C) Explain the concept of unified power flow?
- D) Explain synchronous condenser for voltage control.

Q.2

- A) Prove that the purely reactive compensator cannot maintain both constant voltage and unity power factor at the same time.
- B) Derive approximate formulas for the voltage regulation using short circuit level.

Q.3

- A) Explain the voltage and current profiles of uncompensated radial line on open circuit.
- B) Explain the voltage and current profiles of the uncompensated symmetrical line on no load.

Q.4

- A) Explain the sources and sink of reactive power in power system.
- B) What is surge impedance and surge impedance loading? Prove that under surge impedance loading condition, the ratio of voltage and current at any point along the length of transmission line is same as surge impedance.

Q.5

- A) Explain power factor correction and phase balancing of unsymmetrical load in details.
- B) Explain power flow through mesh transmission lines with suitable example in details.

Q.6

- A) Explain the control of open circuit voltage with shunt reactor at the receiving end.
- B) Explain the principle of operation of TCR and draw its firing angle Vs pu current characteristics.

Q.7

- A) Explain uniformly distributed fixed compensation for modifying line parameters Z_0 , Θ and P_0 .
- B) Explain the shunt compensation by synchronous voltage source.