

Q.P. Code : 627701

(3 Hours)

[Total Marks : 100

- 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.

1. (A) Write a short note on Booster transformer.
(B) Explain the surge impedance compensation to obtain flat voltage profile for given loading condition.
(C) Explain the concept of unified power flow?
(D) Why we need transmission interconnection?
2. (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. or rated reactive power, Q_r Max and iv) Stiff system.
3. (A) Explain the voltage and current profiles of the uncompensated symmetrical line on no load.
(B) Explain the effect of loading on reactive power requirement of uncompensated line.
4. (A) Explain in detail the Booster transformers for voltage control with its advantages and disadvantages.
(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.
5. (A) Explain power factor correction and phase balancing of unsymmetrical load in details.
(B) Explain different types of FACTS controllers with their objectives in details.
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.

TURN OVER

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.
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