



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR

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QUESTION BANK

Subject with Code : FACTS (16EE4309)

Year & Sem: M.Tech & II-Sem

Course & Branch: M.Tech – PE

Regulation: R16

UNIT –I

1. (a) Briefly discuss about the basic types of FACTS Controllers?
(b) What limits the loading capability of transmission lines? Explain?
2. (a) Explain operation of Single-phase full-wave bridge converter?
(b) Explain transformer connections for 12-pulse operation?
3. (a) Why are need transmission interconnections?
(b) Explain relative importance of controllable parameters?
4. What are the loading capability limitations? Explain how they can limit the loading capability?
5. What are the problems of present day power system and explain how these problems can be mitigated with FACTS controllers?
6. (a) What are the benefits from FACTS Controllers?
(b) Explain the concept of power flow in parallel paths with neat diagrams?
7. Discuss the power flow and dynamic stability aspects of simple power system?
8. Explain transformer connections for 24-pulse operation?
9. Explain transformer connections for 48-pulse operation?
10. Explain the dynamic stability considerations in transmission lines?

UNIT –II

1. (a) Explain comparison of current source converter with voltage source converter?
(b) Explain operation of PWM converter with wave forms?
2. What are the objectives of shunt compensation and discuss its role in improving transient stability, voltage stability and power oscillation damping?
3. Explain with relevant wave forms how three phase voltage source converter can be used to generate and absorb reactive power.

4. Explain basic concept of current sourced converter?
5. Explain the operation of three-level voltage-sourced converter?
6. Explain how shunt compensation is used for voltage regulation at the midpoint to segment the transmission line?
7. Explain the operation of voltage sourced type static var generator with appropriate control scheme
8. Explain in details about static shunt compensation?
9. Discuss how to improve the transient stability by using shunt compensation
10. (a) What is the importance of static shunt compensation in prevention of voltage instability explain?
(b) Explain, how shunt compensation will damp the power oscillation?

UNIT –III

1. (a) Explain the Hybrid VAR generation with their operating V-I areas?
(b) Briefly discuss about the static VAr compensators?
2. (a) Briefly discuss the variable impedance type static VAR generator?
(b) Explain the VAr reserve control of static compensators?
3. Why switching type converter generate and absorb reactive power? Explain one var generator with relevant control scheme.
4. Explain the operation of Thyristor-controlled reactor?
5. Explain the basic operation principles of switching converter type VAR generators?
6. Explain the enhancement of transient stability by the SVC and STATCOM?
7. Explain the implementation of VAR reserve control by the SVC and STATCOM?
8. Compare the dynamic performance of STATCOM and SVC from the
 - i) Transient stability.
 - ii) Response time.
 - iii) Exchange of real power point of view.
9. What is the regulation slope? What are the reasons for regulation slope? Explain with V-I characteristics of the SVC and STATCOM?
10. Derive transfer function and explain dynamic performance of Static VAR compensation.

UNIT –IV

1. (a) Explain the concept of series capacitive compensation?
(b) What are the objectives of series compensation?
2. Explain the improvement of transient stability and power oscillation damping by using series capacitive compensation?
3. Discuss how does series compensation enhances stability of power system?
4. Explain, how series compensation is used for reducing the receiving-end voltage variations?
5. Explain, how series compensation can be applied effectively to damp oscillations?
6. Describe the operating point control of static series compensation with neat block diagram.
7. Explain, how series compensation is used for improvement of transient stability?
8. What are the various objectives of series compensation? Explain them in detail.
9. Explain in details about power oscillation damping in static series compensators?
10. Discuss the concept of series capacitive compensation in transmission line. What is its impact on a power system?

UNIT –V

1. Discuss the control schemes for GCSC, TSSC and TCSC?
2. (a) Explain the operation of GTO Thyristor-controlled series capacitor?
(b) Write notes on SSR characteristics of TCSC?
3. Write short notes on the following: a) GTO thyristor controlled series capacitor
b) Thyristor controlled series capacitor.
4. Explain the operation and control schemes of GTO Thyristor-controlled series capacitor?
5. Explain the operation of Thyristor -switching series capacitor?
6. Draw the characteristics of Thyristor Controlled series capacitor and explain the operation of TCSC with relevant wave forms.
7. Discuss the principle of operation and the characteristics of a thyristor controlled reactor.
8. Explain the fundamental requirements of TSSC?
9. Explain the fundamental requirements of TCSC?
10. Explain the fundamental requirements of GSC?