

M. Tech I Year I Semester Regular Examinations, February 2018

**APPLICATIONS OF POWER ELECTRONICS TO POWER SYSTEMS
(PE & D)**

Time : 3 hours

Max Marks : 60

Answer all **five** units. (5 x 12 = 60 Marks)

UNIT-I

1. (a) Highlight the advantages of shunt compensation over series compensation.
- (b) What are the dynamic stability considerations that should be considered while including FACTS systems into the power system?

OR

2. (a) Write a brief note on loading capability limits with relevance to flexible AC transmission system.
- (b) List the different categories of FACTS controllers with examples.

UNIT-II

3. (a) Briefly explain the objectives of shunt compensation.
- (b) How is the transient stability enhanced by including an SVC in the power system.

OR

4. (a) Explain how STATCOMS perform the dual function of improving the transient stability and damping out the power oscillations.
- (b) Write a brief note on the different methods of controllable VAR generation.

UNIT-III

5. (a) Compare and contrast the control schemes for GTO thyristor controlled series capacitor and TCSC.
- (b) Explain how series capacitive compensation helps in power oscillation damping.

OR

6. (a) With neat diagram explain the structure and functionalities of SSSC.
- (b) Explain how the transient stability enhanced by series compensation.

UNIT-IV

7. With neat diagram explain the structure and functionalities of UPFC.

OR

8. Discuss briefly the basic control system for P and Q control in UPFC.

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UNIT-V

9. (a) Differentiate between shunt series and hybrid filters highlighting their advantages.
- (b) Write a brief note on harmonic causing loads.

OR

10. (a) How are harmonics induced in a transmission system? List the different methods of mitigating them.
- (b) Compare and contrast the functionalities of active and passive filters.
