

Hall Ticket Number:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Code No. : 21701

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.E. (EEE: CBCS) I-Semester Main Examinations, January-2018
(Power Systems & Power Electronics)

Application of Power Electronics to Power Systems

Time: 3 hours

Max. Marks: 60

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Write any two reasons for the need of transmission interconnections.
2. List the advantages of FACTS controllers.
3. How is the reactive power is controlled using FACTS devices?
4. Identify the best location of shunt compensation.
5. Compare fixed series compensation and fixed shunt compensation.
6. Draw the V-I and Loss-I characteristics of GCSC.
7. Illustrate the function of UPFC.
8. Draw the phasor diagram of UPFC.
9. List out different harmonic creating loads.
10. Explain the terms Harmonics & Transients with reference to the power quality.

Part-B (5 × 8 = 40 Marks)

11. a) Discuss about the different limitations of present power system. [3]
b) How FACTS controllers are useful to overcome these limitations. [5]
12. a) What are the objectives of shunt compensation? [3]
b) How shunt compensation can be used to improve Power Oscillation Damping. [5]
13. a) Discuss the effect of static series compensation on improvement of transient stability. [4]
b) Explain the thyristor switched series capacitor compensator scheme. [4]
14. a) Describe the capability of the UPFC to control real and reactive power flow in the transmission line. [5]
b) Draw the locus diagram of P & Q with $V_{pq} = 0$. [3]
15. a) Describe the significance of THD and TDD for distorted signal analysis. [3]
b) Explain about different mitigation methods for harmonic elimination. [5]
16. a) List the possible benefits from FACTS technology. [3]
b) Describe the principle of operation of FC-TCR SVC with appropriate control scheme. [5]
17. Answer any *two* of the following:
 - a) Briefly explain the concept of Series Capacitive Compensation [4]
 - b) Draw the power locus diagram of UPFC (with V_{pq}) at $\delta = 0^\circ, 90^\circ, 180^\circ$. [4]
 - c) How passive filters can be used to mitigate harmonics. [4]