VASAVI COLLEGE OF ENGINEERING *(Autonomous)* **HYDERABAD**
M.E. I Year (EEE) I-Semester (Make Up) Examinations, May-2015
(Power Systems & Power Electronics)

Application of Power Electronics to Power Systems

Time: **3** hours   Max. Marks: **70**

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

Part-A (10 X 2=20 Marks)

1. Describe the Dynamic Stability considerations of a Interconnection of Transmission Network.
2. Explain relative importance of FACTS controllers in power system.
3. Briefly explain Midpoint voltage shunt compensation.
4. Define regulation slope. What are the reasons for regulation slope?
5. Describe the objectives of series compensation.
6. Explain in brief, the operation of GTO Thyristor controlled series capacitor.
7. Draw the block diagram of series VSC controller of UPFC.
8. How independent active and reactive power flow control can be achieved?
9. List the sources of Harmonics.
10. Explain the merits of Active filters over passive filters.

Part – B (5 X 10=50 Marks)

11. (a) Discuss the different limitations of present power system   (4)
    (b) How FACTS controllers are useful to improve the system stability?   (6)

12. (a) Mention different methods of variable impedance model of shunt controllers.   (5)
    (b) Discuss the V-I characteristics of SVC and STATCOM and their dynamic performance.   (5)

13. (a) Explain the concept of series capacitive compensation and power oscillation damping.   (5)
    (b) Explain the control schemes for SSSC and TCSC.   (5)

14. (a) Draw the schematic diagram of UPFC and explain its operating principle.   (5)
    (b) Discuss basic control system for P and Q control using UPFC.   (5)

15. (a) List the different types of power quality problems. Explain in detail.   (6)
    (b) List and explain the various harmonic sources.   (4)

16. (a) Derive transfer function and explain dynamic performance of static VAR compensation.   (6)
    (b) Explain effects of the power oscillation damping .   (4)

17. (a) Write short notes on the following (a) Active and passive filters.   (5)
    (b) Write a short notes on TCSC.   (5)

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