EX - 8303 B.E. VIII Semester Examination, June 2015
FACTS (Elective-III)

Time: Three Hours   WWW.RGPVONLINE.COM   Maximum Marks: 70

Note: i) Attempt one questions from each unit, ii) All questions carry equal marks.

Unit -1

1. a) What is bulk power system? Discuss the basic issues of power transmission networks.
b) Describe flexible AC transmission system controllers. Enumerate benefits due to FACTS controllers.

OR

2. a) Derive transmission line equations for the analysis of uncompensated AC transmission line,
b) Discuss the need of passive reactive power compensation. How do you study the effects of passive reactive power compensation? Explain in brief.

Unit-II

3. a) What are the objectives of static Var compensator in power system? Explain.
B) Briefly describe the way by which the transient stability is enhanced due to static Var compensator.

OR

4. a) The voltage regulator of a SVC is designed for an ESCR of 2.0. If the slope of the control characteristics is 0.05 pu, determine the transfer function of the regulator. If the operating value of ESCR is 5.0, what is the response time (to reach 95% of the final value) and the steady state change in the SVC voltage if Vref is increased by 0.05 pu. Assume the system frequency to be 50 Hz.
b) Draw and explain the equivalent circuit of Static Var Compensator.

Unit-III

5. a) Describe the basic concepts of controlled series compensator.
b) Explain the operation of TCSC with the help of suitable diagrams.

OR

6. a) Explain the operation of GTO thyristor controlled series capacitor with line diagram and current and voltage wave forms.
b) What is SSR? Describe how SSR is mitigated with GCSCorTCSC.

Unit-IV

7. a) Describe the principle of operation of STATCOM.
b) Derive power flow control characteristics of static synchronous scries compensator.

OR

8. a) Explain the operation of SSSC and Give the comparison between variable series compensation and SSSC.
b) Describe the operation of a unified power flow controller connected at the sending end.

Unit-V

9. a) Describe the interactions of controller based on kinds and frequencies.
b) Enumerate the basic steps for the controller design procedure and explain in brief.

OR

10.   Explain in detail SVC-SVC interaction.