

Code: 9A02702

R09

B.Tech IV Year I Semester (R09) Regular & Supplementary Examinations December 2014

FUNDAMENTALS OF HVDC & FACTS DEVICES

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 Analyze a six pulse rectifier bridge circuit with an overlap angle less than 60° with the help of neat sketch. Deduce the relevant equations and draw the necessary waveforms.
- 2 (a) Discuss about the principles of DC link control.
(b) Explain the three different variations of the equidistance pulse control scheme.
- 3 (a) Explain the effect of firing angle errors on non characteristic harmonics.
(b) Write short notes on the following:
(i) Design criteria of DC filters.
(ii) Protection of filters.
- 4 (a) Explain in detail about the simultaneous method of power flow analysis.
(b) Explain the per unit system for DC quantities.
- 5 Explain in detail various series and shunt connected controllers with the help of neat sketches.
- 6 (a) With the neat sketch, explain the function of thyristor controlled reactor? Draw the relevant waveforms.
(b) Compare the V-I and V-Q characteristics of SVC and STATCOM.
- 7 Explain in detail about the basic operation control scheme for GCSC, TSSC and TCSC.
- 8 Explain how the independent real and reactive power control is done by using UPFC.
