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INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech II Semester End Examinations (Regular) - July, 2017

Regulation: IARE-R16

FLEXIBLE AC TRANSMISSION SYSTEMS

(Power Electronics and Electrical Drives)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

1. (a) What are the benefits of FACTS controllers. [7M]
- (b) Explain the power flow in parallel paths and meshed networks. Also explain the inter connections in power flows? [7M]
2. (a) What are the different FACTS controllers used and briefly explain them? [7M]
- (b) What is the importance of controllable parameters in FACTS devices. [7M]

UNIT – II

3. Explain the principle of operation of single phase full wave bridge converter in detail. Draw the necessary waveforms of various AC and DC quantities? [14M]
4. (a) Explain the transformer connections for 12 and 24 pulse converter. [7M]
- (b) Compare current source converter with voltage source converter. [7M]

UNIT – III

5. (a) Why transmission line require reactive power compensation? Justify. [7M]
- (b) Explain the midpoint compensation technique for stability improvement. [7M]
6. Explain the TCR and TSC type of VAR generators in detail? Derive the necessary equations. [14M]

UNIT – IV

7. (a) Explain the operation and characteristics of SVC. [7M]
- (b) Explain the transient stability enhancement using SVC. [7M]
8. Explain the comparison of SVC and STATCOM. Discuss the operational and performance characteristics of SVC and STATCOM. [14M]

UNIT – V

9. (a) Why series compensation is used? Justify. [7M]
- (b) How series compensation improves transient stability? [7M]
10. Explain the various control schemes of GSC, TSSC and TCSC. [14M]