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Date: 13/01/16

Exam No: _____

GANPAT UNIVERSITY
M. TECH SEM. 1st ELECTRICAL ENGINEERING
REGULAR EXAMINATION NOV-DEC 2015
3EE106: FLEXIBLE AC TRANSMISSION SYSTEMS

MAX. TIME: 3 HRS

MAX. MARKS: 60

Instructions:

- (1) This Question paper has two sections. Attempt each section in separate answer book.
- (2) Figures on right indicate marks.
- (3) Be precise and to the point in answering the descriptive questions.

SECTION: I

- Q. 1 (a) Discuss Principle of operation and V-I characteristics of STATCOM using suitable diagram. (05)
- (b) Derive Transmission Line Equations for Uncompensated AC Line. (05)
- OR
- Q. 1 (a) Discuss the role of SVC as a voltage controller. (05)
- (b) Define FACTS, FACTS Controller & Discuss Transmission system limitation. (05)
- Q. 2 (a) Explain configuration & operating characteristics of Saturated reactor. (05)
- (b) Explain Performance of a Symmetrical line. (05)
- OR
- Q. 2 (a) Prove that, for a given compensation, the reactive power rating of series compensator is much less than that of shunt compensator. (05)
- (b) Explain operating characteristics of TCR with & without voltage control. (05)
- Q. 3 Attempt any two (10)
- (a) Explain Influence of the SVC on the System Voltage.
- (b) Give Comparison of various SVC's.
- (c) Explain Shunt Compensation Connected at the Midpoint of the Line.

SECTION: II

- Q. 4 (a) Discuss the impedance versus firing angle delay characteristics of TCSC. Write the expression for X_{TCS} (05)
- (b) Discuss the application of UPFC in power system steady state stability enhancement. (05)
- OR
- Q. 4 (a) Explain the construction and working of IPFC. (05)
- (b) Give the functional control scheme for a SSSC. (05)
- Q. 5 (a) Explain the analysis of TCSC operation for the time interval $(\beta < \omega t \leq \pi - \beta)$. (05)
- (b) Discuss the application of IPFC in power systems. (05)
- OR
- Q. 5 (a) Explain with a neat sketch and waveforms the SSSC type of series controller. (05)
- (b) Explain the construction and working of Unified Power Flow Controller (UPFC). (05)

Q. 6

Attempt any two

(10)

- (a) Give Comparison between Variable Impedance type and Switching Converter type FACTS devices.
- (b) Describe Thyristor Controlled Transformer with its various arrangements.
- (c) Compare the working of TCSC with SSSC.

-----END OF PAPER-----