GANPAT UNIVERSITY
M. TECH SEM-I (ELECTRICAL ENGINEERING)
REGULAR EXAMINATION – NOV-DEC-2014
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) Explain the limiting factors for real and reactive power transmission through EHVAC transmission system. [5]

(B) Prove that midpoint compensation can almost double the power transmission capacity of a transmission line. [5]

OR

Q.-1 (A) Prove that for a given compensation, the reactive power rating of series compensator is much less than that of shunt compensator. [5]

(B) Explain the role of phase shifting transformer in FACTS technology. [5]

Q.-2 (A) Discuss principle of operation and V-I characteristics of STATCOM using suitable power circuit diagram. [5]

(B) Explain influence of the SVC on the system voltage. [5]

OR

Q.-2 (A) Discuss the advantages of TSC-TCR type SVC over FC-TCR type. [5]

(B) Explain how SVC is modelled for load flow study. [5]

Q.-3 (A) Discuss the advantages of FACTS controllers over the conventional controllers. [5]

(B) Explain configuration & operating characteristics of saturated reactor. [5]

SECTION – II

Q.-4 (A) Explain operating characteristics of TCR with & without voltage control. [5]

(B) Explain principle of operation of SSSC. [5]

OR

Q.-4 Explain the working of six pulse converter used in FACTS devices. Draw the circuit diagram and discuss the various current and voltage waveforms in detail. [10]

Q.-5 (A) Explain analysis of Thyristor Controlled Series Capacitor (TCSC). [5]

(B) Describe Thyristor Controlled Transformer with its various arrangements. [5]

OR

Q.-5 (A) Discuss the control system of SSSC. [5]

(B) Explain the principle of operation of IPFC. [5]

Q.-6 **(A)** Explain any two modes of TCSC operation. [5]

(B) Explain the principle of operation of Unified Power Flow Controller (UPFC). [5]

<div align="center">END OF PAPER</div>