

Reg. No.

--	--	--	--	--	--	--	--	--	--

B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Seventh Semester

EE16012 – FLEXIBLE AC TRANSMISSION SYSTEMS*(Electrical and Electronics Engineering)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

PART A - (10 X 2 = 20 Marks)

	CO	RBT
1. State the objectives of FACTS controllers.	1	U
2. What is meant by passive compensation?	1	U
3. Draw the V-I Characteristics of SVC.	2	R
4. Write the applications of SVC.	2	R
5. List the advantages of TCSC.	3	R
6. What is the need for variable-series compensation?	3	AN
7. What are the function of STATCOM?	4	U
8. List out the application of IPFC.	4	R
9. What is the need for coordination of different FACTS controllers?	5	U
10. Define sub synchronous resonance (SSR) Interactions.	5	R

PART B - (5 X16 = 80 Marks)

11. (a) (i) Explain the different types of compensation possible in uncompensated transmission line for reactive power control. **(8)** **1** **AN**
- (ii) Discuss the effect of series and shunt compensation schemes on power transfer capacity. **(8)** **1** **AN**
- (OR)**
- (b) (i) Explain the role of different FACTS devices in reactive power compensation. **(8)** **1** **AN**
- (ii) Derive the expression for active as well as reactive power flow in a lossless transmission line? **(8)** **1** **AN**

12. (a) (i) Explain the method of enhancing the transient stability of power system with SVC. **(8) 2 AP**
(ii) Discuss the different advantages of slope in dynamic characteristics of SVC. **(8) 2 AP**

(OR)

- (b) Explain the operation of the SVC with TSC and TCR combination and derive the equations used. Also explain how the SVC is able to regulate the voltage. **(16) 2 AN**
13. (a) (i) Explain the working and characteristics of TCSC. **(8) 3 U**
(ii) Describe the modelling of TCSC. **(8) 3 U**
- (OR)**
- (b) Explain how series compensation improves **(16) 3 AP**
(i) Transient stability and
(ii) Power oscillation Damping.

14. (a) Discuss about the basic operating principle and characteristics of Unified Power Flow Controller (UPFC). **(16) 4 U**

(OR)

- (b) (i) Explain the application of STATCOM in the enhancement of steady state power transfer. **(8) 4 AP**
(ii) Explain the principle of operation of SSSC. **(8) 4 U**
15. (a) (i) Explain different types of control interactions on FACTS. **(8) 5 U**
(ii) Explain coordination of multiple controllers using linear control techniques. **(8) 5 U**

(OR)

- (b) Explain the control coordination of multiple controllers using genetic algorithm. **(16) 5 U**