

**B.Tech. – VIEP – ELECTRICAL ENGINEERING
(BTELVI)**

Term-End Examination

00535

June, 2017

BIEEE-008 : FLEXIBLE AC TRANSMISSION SYSTEM

Time : 3 hours

Maximum Marks : 70

Note : Attempt five questions in all. All questions carry equal marks. Use of scientific calculator is permitted.

1. (a) Show the effect of series and shunt compensation is $Z_0' = Z_0 \sqrt{\frac{1 - k_{se}}{1 - k_{sh}}}$, where symbols have usual meanings. 7
- (b) Explain why TCR is preferred over TSC when continuous voltage control of a bus is required. 7
2. (a) Discuss briefly various problems associated with reactive power transmission. 7
- (b) Show that the line length and power factor affects the voltage and reactive power of an uncompensated line under load. 7

3. (a) Explain TCR. Plot its fundamental V and I characteristics. 7
- (b) Differentiate between Unified Power Flow Controller (UPFC), Static compensator and Static VAR compensator. 7
4. (a) Derive that voltage is a function of reactive power. 7
- (b) Compare SVC and STATCOM. 7
5. (a) Explain the need of filters in thyristor based compensators. 7
- (b) Why is flat voltage profile desired for transmission lines ? Explain some of the methods for voltage control. 7
6. (a) Discuss about Battery Energy storage system in detail. 7
- (b) Explain the working of a thyristor controlled voltage regulator with the relevant diagram. 7
7. Write short notes on any *two* of the following : $2 \times 7 = 14$
- (a) Interline Power Flow Controller
- (b) Phase Angle Regulator
- (c) Series Compensation
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