

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

Term-End Examination

June, 2016

00846

BIEEE-008 : FLEXIBLE AC TRANSMISSION SYSTEM

Time : 3 hours

Maximum Marks : 70

Note : Attempt any five questions in all. All questions carry equal marks.

1. (a) Mention all possible benefits of FACTS devices in power system. 7
- (b) "Reactive power flow depends on the difference in the voltage gradients of two ends in power system." Prove the statement. 7
2. (a) What is compensation ? Compare shunt and series compensation techniques. 7
- (b) Explain and draw V & I profiles for uncompensated transmission lines under no-load conditions. 7
3. (a) How are the characteristics of 'TCR' modified in the presence of fixed capacitor bank ? 7
- (b) Explain transient free switching in 'TSC'. 7

4. (a) Draw the single line diagram of 'UPFC' and explain its principle of working. 7
- (b) Discuss the operation of 'IPFC' and its PQ characteristics. 7
5. (a) Discuss the various methods of line compensation and explain one of these in detail. 7
- (b) Derive a relationship between line impedance (Z_0), ' K_{se} ' and ' K_{sh} ' (degree of series and shunt compensation). 7
6. (a) Draw a power circuit diagram for '06 pulse' VSC based STATCOM. 7
- (b) What are the advantages and disadvantages of synchronous condensers over static compensator? 7
7. Write short notes on any *two* of the following: $2 \times 7 = 14$
- (a) Active and Passive Compensation
- (b) Line and Load Compensation
- (c) Conventional Methods of Voltage Control
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