

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

**Term-End Examination**

**December, 2012**

**BIEEE-008 : FLEXIBLE AC TRANSMISSION  
SYSTEM**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Attempt any seven questions. All questions carry equal marks. Assume missing data, if any.*

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1. What is series capacitor compensation ? What are the relative advantages and disadvantages ? Analytically compare between the series and shunt compensation of transmission line. **10**
  
2. Briefly describe the operation of SSSC as a FACTS device. Why TCSC is another series connected FACTS device ? Justify. **10**
  
3. What is a hybrid model combining the FACTS controllers TCSC and TSSSC ? What are advantages ? **10**
  
4. What are the modelling concepts of SVC in a power flow program ? Give power flow model of SVC. **10**

5. What do you mean by STATCOM ? Describe the power flow model of a STATCOM. Why does it act as a shunt controller in FACTS technology ? **10**
6. Classify the combined shunt-series controllers in FACTS. Describe the operation and modelling concept of a static phase shifter. **10**
7. A delta connected TCR is connected to a 400kV Transmission line through a 10:1 step-down transformer the max. reactive power at rated voltage is 100 MVAR. What could be the value of fundamental component of line current of the TCR at 400 kV side for the conduction angle  $120^\circ$  ? What is the peak current in the thyristor ? **10**
8. Write short notes on *any two* of the following :  $2 \times 5 = 10$
- (a) Back up Energy Supply Devices
  - (b) SSC
  - (c) SVR
9. (a) Draw the schematic block diagram of a UPFC. **5**
- (b) What is an Interline Power Controller ? (IPC) **5**
10. Describe briefly TCVR and TCPAR. **10**