



Reg. No. : .....

Name : .....

**First Semester M.Tech. Degree Examination, February 2015**  
**(2013 Scheme)**  
**ELECTRICAL AND ELECTRONICS ENGINEERING**  
**Stream : Power Control and Drives**  
**EDC 1002 : Application of Power Electronics in Power Systems**

Time : 3 Hours

Max. Marks : 60

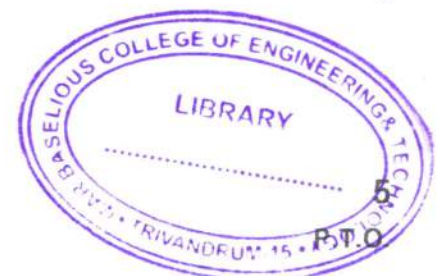
**Instruction : Answer any two from each Part.**

PART – I

1. a) Explain the basic operation control scheme for TCSC with block diagram. 5  
b) Explain the basic steps and equations for modelling TCSC, with the help of equivalent circuit, assuming TCSC as a parallel combination of TCR and a fixed capacitor. 5
2. Explain with block diagram  
a) functional internal control scheme.  
b) functional external control system for SSSC. 10
3. Compare the performance of the following series compensation schemes in terms of compensating voltage and losses Vs line current.  
a) SSSC                      b) TCSC                      c) TSSC. 10

PART – II

4. a) Briefly describe the "IEEE recommended practice and requirements for harmonic control in Electric power systems". 5  
b) Explain the following power quality events  
i) Sag and swell in voltage  
ii) Impulse transient and oscillatory transients.  
iii) Interruption and notching.





5. a) Explain various harmonic generating loads and its effect on PQ of power system. 5  
b) Explain various steps in harmonic mitigation. 5
6. a) Explain the series and parallel resonance in power system and its effect on PQ. 5  
b) What are the various power quality issues affected by distributed generation? 5

PART – III

7. a) Explain the principles of DC link voltage control in HVDC system. 5  
b) What are the basic requirements of firing pulse generation in HVDC system? Explain IPC and EPC scheme. 5
8. a) Give the relative merits and demerits of bipolar HVDC system with HVAC system. 5  
b) Explain the performance of characteristics power flow of VSC based HVDC system under dynamic condition. 5
9. a) Explain the modelling of PV grid connected system under Islanding phenomenon. 5  
b) Compare smart grid, micro grid and the effect of interactive DG system on it. 5
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