

**R09**

**Code No: C4305, C6402, C5603**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**M.Tech I - Semester Examinations March/April 2011**

**HIGH VOLTAGE DC TRANSMISSION**

**(COMMON TO POWER ELECTRONICS, POWER ENGINEERING &  
ENERGY SYSTEMS, POWER SYSTEMS HIGH VOLTAGE)**

**Time: 3hours**

**Max.Marks:60**

**Answer any five questions  
All questions carry equal marks**

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1. a) Compare different performance aspects of HVDC transmission over the EHVAC transmission  
b) Draw the converter station configuration diagram? Briefly explain its various components in it? [16]
2. Derive equations for average voltage and current of Greutz circuit in terms of ignition delay angle and extinction angle confine to overlap less than  $60^0$  [16]
3. a) What are the different types considerable harmonics generated by converter station? Explain in detail.  
b) Briefly describe how the harmonics are filtered in the converter station. [16]
4. a) Explain the need for compounding both rectifier and inverter stations with constant current control. How do you determine the current margin between the two stations?  
b) Discuss the DC power flow control in HVDC link. [16]
5. a) Briefly discuss about voltage regulation capabilities in HVDC link.  
b) Discuss the dynamic stability is improvement in AC-DC system with power frequency control? [16]
6. a) Discuss series multi terminal HVDC system and its control.  
b) What are the over voltages due to disturbances on AC system side? Explain. [16]
7. What are transient over voltages due to disturbances on DC and AC system side line faults? Explain them. [16]
- 8.a) What are the different causes of converter faults?  
b) Explain how the dc line is protected? Explain over voltage protection methods converters. [16]

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