

Code No: I5602/R16

M. Tech. I Semester Regular Examinations, January-2017

**HVDC TRANSMISSION**

[Common to Power Systems(56),PSC &A(53),PSE(30),PS & C(31),ADV PS(50),EPE(60)  
Power Electronic (43),PI&D(42),PE & ED(54),PE & D (52),PE & S(12),EM & D(44)  
Power Electronics & Power Systems (99), High Voltage Engineering (62) and PS WITH  
Emphasis ON H.V. Engg (29)]

Time: 3 Hours

Max. Marks: 60

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*Answer any FIVE Questions  
All Questions Carry Equal Marks*

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1. a Explain the types of HVDC links and its purpose with neat diagrams. 6 M  
b Draw the typical layout of HVDC transmission system and explain each part. 6 M
2. Explain the individual characteristics of rectifier and inverter operation with neat sketch. 12
3. a Draw the schematic diagram of a typical HVDC converter station with 2 six pulse converter units and explain the function of each component. 6 M  
b Explain the constructional features of a converter transformer. 6 M
4. a Explain in detail about equidistance firing angle scheme. Also list the draw backs of this scheme. 6 M  
b What are the factors responsible for generation of harmonic voltage and current? 6 M
5. a Explain the objective of DC power modulation in detail. 6 M  
b Discuss constructional difference of DC circuit breaker with AC circuit breaker. 6 M
6. a Discuss the list of dominant harmonics present in the various types of HVDC converters. 6 M  
b Discuss series-parallel multi-terminal HVDC system and its control. 6 M
7. a Discuss the operation of surge arrestors for overvoltage protection of HVDC Systems. 6 M  
b Explain the basic principles of over current protection. 6 M
8. a Explain the nature of transient over voltages due to disturbances on DC side. 6 M  
b Write a short note on 6 M
  - i. Over voltages on the HVDC system
  - ii. By-pass valve and its use.

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