NR

Code No: 52202/MT

M.Tech. – II Semester Regular Examinations, September, 2008

HVDC TRANSMISSION
(Common to Power Electronics & Electric Drives/ Electrical Power Systems/ Power & Industrial Drives)

Time: 3hours **Max. Marks:60**

Answer any FIVE questions
All questions carry equal marks
- - -

1.a) With the help of a schematic diagram discuss about the major components of a HVDC converter station.
b) Explain the power handling capabilities of HVDC lines.

2.a) Derive the expression for DC voltage of a six pulse bridge converter, considering gate control and source reactance.
b) Obtain the equivalent circuit for rectifier operation of a Graetz circuit.

3.a) Discuss about various types of AC filters that can be used for harmonic reduction.
b) Calculate AC harmonics of a 12-pulse converter using fourier analysis. Neglect overlap and assume that direct current is ripple free?

4.a) Draw converter controller characteristic and explain why it is desirable to have current control at rectifier station and CEA control at inverter station.
b) Explain pulse frequency control firing scheme.

5.a) Discuss harmonic instability problems in HVDC systems.
b) What is meant by reactive power control? How it is achieved? Explain in detail.

6.a) Discuss the advantages and disadvantages of series and parallel MTDC systems.
b) Explain Two ACR method for control of MTDC systems.

7.a) Discuss about various faults that can occur in converts.
b) Explain the over voltage protection in converter station.

8. Write short notes on the following:
(i) DC line protection
(ii) Corona effect on DC lines
(iii) DC breakers.

* * * * * *