Roll No .....

MEHP - 104

M.E./M.Tech., I Semester

Examination, June 2014

HVDC Transmission

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Discuss the different factors that favour HVDC transmission systems over EHV transmission over long distances.

   b) What are the different HVDC links normally adopted?

2. What is meant by firing angle delay and commutation delay? Draw the circuit diagram, voltage and current wave forms of a Graetz circuit and when $\alpha = 300$ and $\mu = 15^{\circ}$. Derive the expressions for Average DC Voltage.

3. a) What are the sources for over voltage's in HVDC systems? How are they controlled?

   b) Discuss the need for circuit breakers in HVDC links?

4. a) Discuss about characteristic and non-characteristic harmonics generated in HVDC systems.

   b) What are the adverse affects of Harmonics produced by the HVDC converters?

5. Explain in detail about the modeling of HVDC system for digital dynamic simulation.

6. Describe the philosophy and tools used in HVDC simulation.

7. a) Discuss about various types of AC filters which will be employed for a HVDC link.

   b) Explain the effect of overlap angle on the performance of converter circuit.

8. Write short notes on the following :

   a) MTDC systems.

   b) Fault clearing and re-energizing the line.

   c) Design of DC filter.

   d) Modern trends in DC transmission.

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