Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

MEPE - 302(B)

M.E./M.Tech., III Semester

Examination, June 2016

EHV AC and DC Transmission (Elective-II)

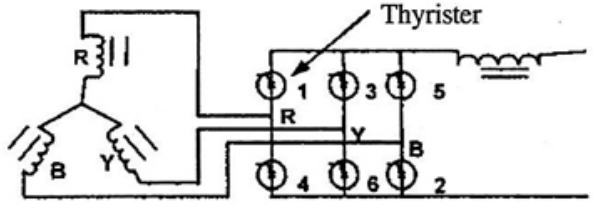
Time : Three Hours

Maximum Marks : 70

Note : Solve any five questions. Assume suitable data if necessary.

1. a) Draw the schematic diagram of a typical DC link showing the major equipment at either end and explain the functions of each component in brief. 7
   b) Discuss various types of HVDC Links used in HVDC transmission and their application. 7

2. a) Draw the voltage waveform across thyristor 4 (as shown in figure). when a six pulse converter is operating with an advance angle of 60° and an overlap angle of 30°. What conclusion can you draw from this voltage waveform. 7



   b) Discuss back-to-back HVDC links and their use. Also give names of these links being used in India. 7

3. a) Discuss problems associated with long distance HVAC power transmission. 7
   b) What is light HVDC. Discuss its advantages over conventional one. 7

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4. a) Discuss Load and system compensation in power systems. What is the basic difference between them. 7
   b) What is series compensation? Discuss its role in an enhancement of power transfer capacity in EHV networks. 7

5. a) A line of natural impedance Z_1 is connected to two lines of natural impedance Z_2 and Z_3 respectively. A wave is traveling over line. Determine reflected and refracted component of voltage and current wave. 7
   b) A surge of 10 kV magnitude travels along a cable towards its junction with an overhead line. The inductance and capacitance of the cable and over head line are respectively 0.18 mH, 0.24 μF and 0.9 mH, 0.0072 μF per Km. Find the voltage rise at the junction due to the surge. 7

6. a) With neat diagram show that converter control characteristics in $V_d - I_d$ plane will change, when the direction of power flow is reversed. 7
   b) Discuss the effect of commutation failures in HVDC converters. How it can be prevented? 7

7. a) Discuss generation of various types of harmonics in HVDC converters. 7
   b) Explain voltage protection in a converter station. 7

8. Write short notes on any three. 14
   a) MTDC systems
   b) Ignition angle control of HVDC lines
   c) Ferranti Surge Absorber
   d) DC filters
   e) Surge Absorber

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