Reg. No. : | | | | | | | | | | |

Question Paper Code: 52501

M.E. DEGREE EXAMINATION, MAY 2017

Elective

Power Electronics and Drives

15PPE503 - HVDC SYSTEMS AND CONTROL

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) (i) Draw and describe the types of DC links and the converter station of the DC transmission system. (15)

(ii) Draw and mention the types of DC links. (5)

Or

(b) (i) Draw and explain the different configurations for asynchronous interconnection and selection of optimum system voltage for a fixed power transfer in the planning for HVDC transmission. (15)

(ii) Describe the SCR in detail. (5)

2. (a) Describe a method for obtaining the fast steady-state solution of HVDC converter equation and Explain how this method is illustrated with the analysis of a six pulse converter with filter. (20)

Or

(b) (i) Explain the operation of Graetz circuit with the help of a neat circuit diagram and waveform. (15)

(ii) State the assumption made in the simplified analysis of Graetz circuit. (5)

3. (a) (i) Classify the MTDC system. Explain each type. (15)

(ii) What is meant by current reference balancer? (5)

Or

(b) Explain the following control methods of MTDC systems: (i) Current margin method (ii) Voltage limiting control method. (20)

4. (a) Briefly explain about the modeling the DC links. (20)

Or

(b) (i) Explain about the per unit system for DC quantities. (15)

(ii) Compare the simultaneous and Sequential methods of DC converter. (5)

5. (a) Explain the physical model for HVDC system. (20)

Or

(b) (i) What are the problem that can be studied using DC simulator and the application of DC simulator and the application of DC simulator. (15)

(ii) List the basic requirements of a good simulation tool. (5)