Roll No.:

B.E. / B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2012

ELECTRICAL & ELECTRONICS ENGINEERING BRANCH

SIXTH SEMESTER

EE9045 – HIGH VOLTAGE DIRECT CURRENT TRANSMISSION

(REGULATIONS 2008)

Time : 3 Hours | Answer ALL Questions | Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. What are the limitations of HVDC transmission system?
2. Name the existing HVDC systems in India with their power rating.
3. Explain the term Delay angle and its significance in rectifier control.
4. What are the merits of higher pulse number?
5. What are the drawbacks of individual phase control scheme?
6. Discuss the necessity of higher-level controller for the HVDC link.
7. What are the causes for generation of non-characteristics harmonics?
8. List the various types of filters used in HVDC substation.
9. List the system studies necessary for HVDC system planning.
10. What is the need for simulation of HVDC systems?

Part – B (5 x 16 = 80 marks)

11(a)(i). A 3-phase, 12-pulse rectifier is fed from a transformer.

(i.1) If the primary voltage is 230 kV and the effective turns ratio T is 0.5, determine the dc output voltage when the ignition delay angle α is 15° and the commutation angle μ is 10°. (5)

(i.2) If the direct current delivered by the rectifier is 2 kA, calculate the effective commutating reactance Xc, RMS fundamental component of alternating current, power factor and reactive power at the primary side of the transformer. (5)

11(a)(ii). Explain the operation of Graetz circuit with the help of a neat circuit diagram and waveforms. (6)

12(a). Compare and contrast HVAC and HVDC transmission systems. (16)

OR