

National Institute of Technology Delhi
Department of Electrical and Electronics Engineering

Mid Semester Examination (Spring Semester 2021-22)

(B. Tech. VIII Semester)

HVDC & Flexible AC Transmission Systems (EEL-451)

Max. Marks: 25

Time : 1.5 Hrs

Attempt all parts. All parts carry equal marks. (5*5=25)

- Q.1** Explain the comparison of AC and DC transmission in terms of technical performance and economics. What are applications of DC transmission system?
- Q2.** Draw the schematic diagram of a typical HVDC transmission system and explain the apparatus required for HVDC System. Describe monopolar, bipolar and homopolar HVDC links.
- Q3.** Explain the analysis of Graetz circuit with overlap angle in 3 and 4 valve conduction mode.
- Q4.** Attempt any two parts:
- a. Draw the characteristic of Converter Bridge in rectifier mode of operation.
 - b. Draw the characteristic of 12 pulse converter
 - c. A six-pulse thyristor bridge converter connected to 230V (line-line), 50Hz, 3 phase, AC supply. If the reactance on ac side is 0.1502 ohm and overlap angle is 15° and firing angle is 0° , calculate DC load current (I_d) and average DC voltage (V_d).
- Q5.** Attempt any two parts:
- a. Principle of HVDC control.
 - b. Draw the control characteristics of rectifier and inverter stations and explain their control modes of operation.
 - c. Characteristic harmonics & non-characteristic harmonics.


Dr. Shubhra

(SUBJECT TEACHER)