

Code No: 137DG

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, October/November - 2020

HVDC TRANSMISSION
(Electrical and Electronics Engineering)

Time: 2 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Show that HVDC transmission advantageous over HVAC transmission for bulk power transmission.
- b) Explain the principle of operation of 6-pulse bridge converter with different modes of operation. Draw the output voltage waveform. [7+8]
- 2.a) Explain various types of DC links, with the help of neat circuit diagram. Give the overall comparison of them.
- b) Derive the average output voltage of 6-pulse HVDC converter operation for 2-valve conduction mode. [7+8]
- 3.a) What are the basic means of control of HVDC link? List the desired features of HVDC control.
- b) Explain the concept of DC power flow control and indicate the necessary control step and the trajectory of the operating point on the HVDC control characteristics. [7+8]
- 4.a) Explain constant current control in HVDC converter stations and How is it achieved under steady state operation.
- b) Briefly explain the steps involved in Starting and Stopping of a DC link. [7+8]
5. Briefly explain about the modelling aspects of DC link for DC power flow analysis, and discuss about the sequential DC power flow method. [15]
6. Explain Simultaneous AC-DC Power flow method. [15]
7. Briefly discuss about the causes of over-voltages on HVDC system. Discuss about the over voltage protective schemes employed. [15]
8. Describe about characteristic and non-characteristic harmonics in HVDC systems and explain the various methods of eliminating harmonics in HVDC system. [15]

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