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Code No: 157BY

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, February/March - 2022

HVDC TRANSMISSION

(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks

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1.a) State advantages and disadvantages of DC over AC transmission system.
b) With neat sketch, explain various types of HVDC systems. Briefly discuss about their merits and demerits. [6+9]

2.a) Draw the circuit diagram of Graetz circuit.
b) Draw the equivalent circuit representation of HVDC system for steady state analysis and indicate various voltage stages. [6+9]

3. With the aid of combined inverter-rectifier characteristics explain the following HVDC control schemes
a) constant-minimum-ignition-angle control
b) constant current control
c) constant-extinction-angle control [15]

4.a) State the important basic controls required for the operation of HVDC systems and explain how they work and maintain system stability under abnormal conditions.
b) Does HVDC converter consume reactive power? Justify your answer. [8+7]

5. Give the DC link and Converter modeling equations in per unit quantities for carrying ac-dc load flow studies. [15]

6. Explain the various steps involved in sequential method for AC/DC load flow. [15]

7. What are the different types of faults that can occur is HVDC systems? Discuss their nature and occurrence. [15]

8. Identify the various sources for generation of harmonics in HVDC systems and mention the various adverse effects caused due to the presence of harmonics. [15]

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