

B.Tech IV Year II Semester (R15) Regular Examinations April 2019

HVDC TRANSMISSION

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

1 Answer the following: (10 X 02 = 20 Marks)

- Explain why DC transmission is used instead of AC.
- What are the types of DC links and draw any one with neat sketch?
- List the various terminal equipment used in converter station.
- What are the special features of converters in HVDC transmission?
- Define constant extinction angle and constant ignition angle control of HVDC.
- Write short notes on principle of DC link control.
- What are the adverse affects of harmonics produced by the HVDC systems?
- Explain about characteristics and non-characteristics harmonics in HVDC system.
- What are the converter faults in HVDC system and explain any one type?
- Discuss the function of surge arrester.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Briefly explain the technical merits and economical considerations of HVDC over HVAC transmission systems.

OR

3 Briefly explain the principles of static conversion and static converter configuration.

UNIT – II

4 From the fundamentals, develop the equivalent circuit of HVDC link.

OR

5 Explain the operation of a 12 pulse bridge rectifier with the help of circuit diagram. Draw the relevant voltage & current waveforms.

UNIT – III

6 Draw the complete converter control characteristics and explain the principle of power control in a DC link.

OR

- Write in brief about control of voltage source converter with neat sketch diagram.
- Enumerate the relative merits and demerits of constant current control and constant voltage control of HVDC link.

UNIT – IV

8 Explain in briefly about harmonic generation sources in HVDC system.

OR

9 Explain why filter used in HVDC system and explain in brief of various types.

UNIT – V

- Briefly explain about over voltages due to DC and AC side line faults.
- Explain the type of converter faults and explain in brief.

OR

11 Explain the method of protection against over voltage and typical arrangement of surge arresters for a converter pole.
