

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2017

HVDC TRANSMISSION

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- List out the applications of HVDC.
 - State the comparison of AC & DC transmission system.
 - Draw the diagram Graetz bridge circuit.
 - Define peak inverse voltage.
 - Define firing angle control.
 - Discuss the effect of source inductance on HVDC system.
 - How harmonics are generated?
 - Write the fundamental components of harmonics with a order of 'h'.
 - What are the different types of faults that can occur in HVDC system?
 - Draw the physical modes of a converter transformer.

PART – B

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

UNIT – I

- 2 (a) What are the different applications of DC transmission system? Explain them in detail.
 (b) With neat sketches, explain the different kinds of DC links.

OR

- 3 (a) Explain the modern trends in DC transmission.
 (b) Explain the principles of static conversion and briefly explain static converter configuration.

UNIT – II

- 4 Draw the schematic circuit diagram of a 6 pulse Graetz circuit and explain its principle of operation.

OR

- 5 Explain the individual characteristics of a rectifier and inverter with neat sketch.

UNIT – III

- 6 Explain firing angle control and briefly explain basic firing angle schemes.

OR

- 7 Explain briefly principles of DC link control.

UNIT – IV

- 8 Mention the various sources of harmonic generation in HVDC systems and suggest methods to eliminate them.

OR

- 9 What are the different types of filters used on the AC side of HVDC system? How they are located and arranged?

UNIT – V

- 10 Explain the method of protection against over voltages and draw typical arrangement of surge arrestors for a converter pole.

OR

- 11 What are the various types of converter faults? Explain them in brief.