

IV B.Tech I Semester Supplementary Examinations, February - 2019

**HVAC & DC TRANSMISSION**  
(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

*Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B*

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**PART-A (22 Marks)**

1. a) Describe surface voltage gradient on conductors. [4]
- b) What is the difference between single phase and three phase audible noise levels? [3]
- c) Show the Cost Vs distance curve of AC & DC Transmission. [3]
- d) List the assumptions made to simplify the analysis of Graetz circuit. [4]
- e) What are the alternate control strategies of reactive power? [4]
- f) What are the effects of pulse number on harmonics? Discuss. [4]

**PART-B (3x16 = 48 Marks)**

2. a) Explain distribution of voltage gradient on the subconductors in a bundled conductor. [8]
- b) Give the brief description about mechanical considerations taken into account for EHV AC lines. [8]
3. a) What are the effects of corona on the radio interference? Explain. [8]
- b) What are the limits of audible noise? How this noise is measured? [8]
4. a) What are the different types of DC links? Illustrate and compare them. [8]
- b) With the help of a neat schematic, write the functions of HVDC converter station components. [8]
5. a) Draw the complete converter control characteristics and explain the principle of power control in a DC link. [8]
- b) Describe with the help of neat diagram & wave forms, the operation of 6 pulse bridge converter with delay angle  $\alpha$  and without overlap. Also derive the expression for its dc voltage. [8]
6. a) Discuss in detail the concept of reactive power requirement in HVDC Transmission systems. [8]
- b) Write the operation of thyristor controlled reactor used in HVDC Transmission. [8]
7. a) What are the adverse effects of non-characteristic harmonics in detail? [8]
- b) Discuss the design aspects of DC filters in HVDC Transmission. [8]