Code No: **RT41022** **R13** **Set No. 1**

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 inference? 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 α 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]