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

IV B.Tech I Semester Supplementary Examinations, March - 2017

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) What is the necessity of EHVAC transmission? Explain. [4]
   b) List out the properties of corona. [3]
   c) Compare AC and DC transmission. [4]
   d) What are advantages of 6 pulse converter over 12 pulse converter? [3]
   e) Define synchronous condenser. [4]
   f) What factors need to be considered in the design of high pass filters? [4]

PART–B *(3x16 = 48 Marks)*

2. a) What are the different mechanical considerations in line performance? Explain. [8]
   b) Show that the variation of surface voltage gradient on the periphery of a sub-conductor of bundle conductor follows cosine law. [8]

3. a) Discuss the relationship between single phase and 3 phase audio noise levels. [8]
   b) A particular three phase transmission line has total corona loss of 57 KW at 110KV and corona loss of 99KW at 114.8KV. Calculate the critical disruptive voltage per phase and corona loss at 120KV. [8]

4. a) Explain the kinds of HVDC links with their characteristics. [8]
   b) Draw the schematic diagram of HVDC transmission system and discuss function of each component. [8]

5. a) Explain the operation of 6 pulse Garetz circuit with the derivation for output voltage. [8]
   b) Discuss in details the effect of source inductance on HVDC system. [8]

6. a) Explain conventional control strategies can be adopted for HVDC transmission system and also draw their characteristics. [8]
   b) What are the various types AC filters that are employed in HVDC and discuss any two filters in detail? [8]

7. a) Derive an equation for harmonic voltage and current for single tuned filter and discuss the influence of network admittance. [8]
   b) Explain the effect of firing angle errors on non characteristic harmonics [8]