Code No: **R1642022** **R16** **Set No. 1**

IV B.Tech II Semester Advanced Supplementary Examinations, Aug/Sep - 2022

HVDC 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 FOUR questions from Part-B

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PART–A *(14 Marks)*

1. a) Write applications of DC transmission? [3]
   b) Why the star-delta connected three phase transformer is used in 12-pulse converters? [2]
   c) Explain the source inductance in the HVDC system? [2]
   d) What is SVC? What is its use in HVDC system? [3]
   e) What is arc back? [2]
   f) What is the role of the AC filter in HVDC transmission? [2]

PART–B *(4x14 = 56 Marks)*

2. a) Compare AC and DC transmission system in terms of economic aspects, technical performance, and reliability? [7]
   b) Explain the classification of DC transmission system with the help of a neat sketch? [7]

3. Draw a schematic of a 6-pulse converter circuit and explain the operation of converter as a rectifier and inverter with relevant waveforms? [14]

4. a) Draw converter control characteristic and explain why it is desirable to have current control at rectifier station and CEA control at inverter station? [7]
   b) Explain the principle of DC link control? [7]

5. a) Write a brief note on conventional and alternate control strategies for reactive power control? [7]
   b) Differentiate between simultaneous and sequential method of ac-dc power flow? [7]

6. a) Explain about over voltage and over current protection in the converter station? [7]
   b) Explain the effect of pulse number on harmonics? [7]

7. a) With neat diagram, explain the different filter configurations used in HVDC Transmission system and draw their impedance characteristics. [7]
   b) What are the different types of filters used on the AC side of an HVDC system? How are they located and arranged? [7]