

Roll No. ....

Total No. of Questions : 08]

[Total No. of Pages : 02

**M. Tech.**

**HVDC TRANSMISSION**

**SUBJECT CODE : PEE - 508**

**Paper ID : [E0488]**

[Note : Please fill subject code and paper ID on OMR]

**Time : 03 Hours**

**Maximum Marks : 100**

**Instruction to Candidates:**

- 1) Attempt any **Five** questions.
- 2) All questions carry equal marks.

- Q1)** (a) Compare HVDC systems and EHV AC system for bulk transmission of power. Also give their merits & demerits.  
(b) List various types of DC Links and using their schematic diagrams distinguish between them.
- Q2)** Discuss control mechanism of HVDC-links. Also discuss basic characteristics of converter controller and explain various modes of link operation.
- Q3)** (a) What is use of three-phase bridge converters? Show the circuit diagram of 6-pulse converter.  
(b) Give an analysis of 3-phase bridge converter with grid control overlap angle,  $\mu \leq 60^\circ$ .
- Q4)** (a) Enumerate various problems associated with the injection of harmonics. How are a.c. current harmonics eliminated-discuss.  
(b) Discuss the performance indices which can be used to reduce the telephone interference for AC filter design. Also name various types of AC filters that can be used to filter out higher harmonics.
- Q5)** Discuss protection aspects of a HVDC-link against overvoltages. Also mention types of overvoltages in above link. Show the schematic diagram of surge arresters for a converter-pole.



- Q6)** What is meant by parallel operation of AC-system and DC system? How are these systems simulated - discuss.
- Q7)** (a) What is corona Discharges? Discuss about corona discharges due to HVDC-link.  
(b) What is RI? Show RI characteristics of a HVDC-link.
- Q8)** Write short notes on :  
(a) Stability aspects of synchronous HVDC-link.  
(b) On parallel operation of AC and DC systems.

