

Seat No.	
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**B.E. (Electrical) (Part - IV) (Semester - VIII) Examination, April - 2016**

**HVDC SYSTEMS**

**Sub. Code : 49429**

**Day and Date : Wednesday, 20 - 04 - 2016**

**Total Marks : 100**

**Time : 03.00 p.m. to 06.00 p.m.**

- Instructions :**
- 1) **Attempt any three questions from each Section.**
  - 2) **Draw neat diagrams wherever necessary.**

**SECTION - I**

- Q1) a)** State advantages and disadvantages of HVDC transmission. State their principle, applications and limitations. **[10]**
- b) Explain the constitution of EHVAC and DC links. **[8]**
- Q2) a)** Sketch and explain a typical layout of HVDC station. **[8]**
- b) State the HVDC Projects in India. Explain any two in detail. **[8]**
- Q3) a)** Explain and draw the equivalent circuit of dc transmission. Explain basic means of control. **[8]**
- b) Explain the converter analysis with overlap angle less than  $60^\circ$ . Draw necessary voltage and current waveforms. **[8]**
- Q4) a)** State and explain desired features of control in dc transmission with converter control. **[8]**
- b) Explain the stability of control in dc transmission. **[8]**

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**SECTION - II**

- Q5)** a) State and explain misoperations of converters. [8]  
b) Explain the process of fault clearing and reenergising the HVDC line. [8]
- Q6)** a) Explain the effect of angle of advance and angle of extinction on reactive power requirement in HVDC system. [8]  
b) Explain and differentiate characteristic and non-characteristic harmonics. State their effects. [10]
- Q7)** a) State the functions of dc smoothing reactor in HVDC system. [8]  
b) What are types of filters? Classify them on different basis. Explain them with neat diagrams. [8]
- Q8)** a) Compare MTDC interconnection and AC interconnection. State the advantages of MTDC system. [8]  
b) Explain internal and external sources of over-voltages in dc system. State methods to control them. [8]

