

B.E. Electrical VII CBGS  
HVDC T

(3 Hours)

[Total Marks: 80]

N.B. - Question No: 1 is compulsory.  
Answer any three from the remaining six questions  
Figures to right indicate full marks  
Assume suitable data if necessary

- Q.1
- (a) Explain different types of HVDC links 10
  - (b) Explain with neat diagrams and waveforms the principle of 12 pulse converter 10
- Q.2
- (a) What are the main components of HVDC transmission 10
  - (b) Explain the firing schemes in HVDC valves. 10
- Q.3
- (a) Explain the causes of harmonic generation in HVDC and its effects on the system. 10
  - (b) Draw control characteristic of rectifier, inverter provided with both C.C. and C.E.A. controller and explain in brief. 10
- Q.4
- (a) Explain single commutation with neat waveforms and diagrams. 10
  - (b) Draw and explain a block diagram of the Hierarchical levels of controls of HVDC transmission system. 10
- Q.5
- (a) Give comparison between A.C. transmission and HVDC transmission. 10
  - (b) Justify the statement "converter consumes reactive power" 10
- Q.6
- (a) Explain the importance of current margin. 10
  - (b) Operation of the bridge converter with overlap angle more than  $60^\circ$  is abnormal. Justify the statement. 10
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