

B.E (Electrical) Sem-VII  
CBGS

29/11/18

1/1

(3 Hours)

(Total Marks : 80)

N. B.

- (1) Question No. 1 is compulsory.
- (2) Attempt any three questions out of remaining questions.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.

1. Solve any four :- 20
  - a) Compare HVDC links and state application of each
  - b) Classify the faults in HVDC
  - c) Explain EPC scheme of firing of HVDC converter bridge
  - d) Create complete control characteristics HVDC
  - e) Show placement of harmonic filters in HVDC
  
2.
  - a) Discuss desired features of control of HVDC and explain basic control characteristic 10
  - b) Investigate that double commutation failure is a self-clearing fault. 10
  
3.
  - a) A 3-phase bridge rectifier has input voltage 345KV. Calculate DC voltage output when  $\mu$  is  $15^\circ$  and  $\alpha$  (i)  $0^\circ$  (ii)  $15^\circ$  (iii)  $30^\circ$ . 10
  - b) For a bridge converter with grid control and overlap less than  $60^\circ$ . Prove that 10

$$\cos\phi \cong \cos\alpha - \frac{R_c \cdot I_d}{V_{do}}$$
  
4.
  - a) Illustrate use of bypass valve in HVDC 10
  - b) How 'Power reversal' is done in HVDC? 10
  
5.
  - a) Explain over voltage and over current protection of HVDC 10
  - b) Illustrate with neat diagrams and wave forms the principal of twelve-pulse converter. 10
  
6.
  - a) Summarize the harmonics and filters in HVDC 10
  - b) Discuss in detail - 'Ground return' 10