

Code: R7410205

R07

B.Tech IV Year I Semester (R07) Supplementary Examinations, May 2013

HVDC TRANSMISSION

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions
All questions carry equal marks

- 1 Explain in detail about the economic advantages of HVDC transmission over HVAC link for transmitting bulk powers from point to point based on insulation requirements and stability.
- 2 For a 3- ϕ , 6-pulse Graetz's circuit, draw the timing diagram considering overlap angle is less than 60° and without overlap for the following:
 - (a) Voltage across load.
 - (b) Voltage across any two pair of conducting valves.
- 3 Explain the individual characteristics of a rectifier and an inverter with sketches.
- 4 With block diagram, discuss the principle of operation of a basic power controller.
- 5 Write short notes on the following:
 - (a) Surge arrestors.
 - (b) Commutation failures.
- 6
 - (a) Derive the mathematical model of DC link controller of a DC link.
 - (b) Write mathematical model of a DC converter.
- 7 It is required to eliminate harmonics of order 10 and below 10 other than fundamental in a 12-pulse converter. Suggest a suitable transformer configuration and derive an equation for primary current of transformer.
- 8 Derive an equation for harmonic voltage and current for single tuned filter and discuss the influence of network admittance on design aspects.
