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Code No. : 7134

**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**M.E. (EEE: CBCS) I-Semester Main Examinations, Jan./Feb.-2017**

(Power Systems & Power Electronics)

**High Voltage DC Transmission**

Time: 3 hours

Max. Marks: 70

*Note: Answer ALL questions in Part-A and any FIVE from Part-B*

**Part-A (10 × 2 = 20 Marks)**

1. Explain the power handling capabilities of HVDC lines.
2. With the help of neat sketch, explain the major components of HVDC systems.
3. Discuss various types of AC filters that can be used for Harmonic elimination.
4. Explain pulse period control firing scheme.
5. Write a short notes on first transient generated on the HVDC system.
6. Deduce about various faults occur in Converters.
7. Draw the Equivalent circuit of rectifier the Graetz circuit.
8. Derive expression for the DC voltage of a six pulse converter.
9. What is meant by Reactive Power control?
10. Discuss advantages and disadvantages of parallel MTDC system.

**Part-B (5 × 10 = 50 Marks)**  
**(All bits carry equal marks)**

11. a) For a fixed power of transmission explain how the economic choice of voltage level is selected in D.C. transmission system.  
b) Deduce the application of smoothing reactor with neat circuit diagram.
12. a) Explain the individual characteristics of a Rectifier and an Inverter with sketches.  
b) Design of single tuned AC filter and also mention its applications.
13. Explain about the following due to AC disturbances in HVDC lines  
a) Transient over voltages  
b) Harmonic over voltages
14. a) Derive the mathematical model of converter for simplified continues time.  
b) Derive the mathematical model of a DC converter.
15. Write short notes on  
a) Types of MTDC systems  
b) Compact converter stations
16. a) Mention the Modern trends in HVDC Technology.  
b) What are the various types of filters that are employed in HVDC converter station?
17. Answer any *two* of the following:  
a) Give details about system insulation co-ordination.  
b) Mention Harmonic Interactions in HVDC systems.  
c) Give the details of forced commutation in HVDC systems.

