

**R09****Code No: D5607, D4904, D4303, D5404****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****M.Tech II - Semester Examinations, March/April 2011****FLEXIBLE AC TRANSMISSION SYSTEMS****(COMMON TO POWER SYSTEMS HIGH VOLTAGE, ELECTRICAL POWER  
ENGINEERING, POWER ELECTRONICS, POWER ELECTRONICS & ELECTRIC  
DRIVES)****Time: 3hours****Max. Marks: 60****Answer any five questions  
All questions carry equal marks**

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1. What are the constraint that limits the power flow and discuss the ways to overcome these limits. What are the benefits from the FACTS controllers? [12]
2. a) Explain the transformer connections for a 12-pulse operation of a voltage source converter.  
b) What are the advantages and disadvantages of current sourced converters over voltage sourced converters. [6+6]
3. Explain the operation of 3-level voltage sourced converter in detail. [12]
4. Explain the necessity of short compensation from the view point of
  - i. Midpoint voltage regulation
  - ii. Prevention of voltage in stability
  - iii. Improvement of transient stability. [12]
5. Explain the different methods of controllable VAR generation. And also discuss about hybrid VAR generators. [12]
6. Discuss the concept of series capacitive compensation in transmission line. What is its impact on a power system? [12]
7. Discuss the principle of operation and the characteristics of a thyristor controlled reactor. [12]
8. Write notes on the following.
  - i) STATCOM
  - ii) TCSC. [12]

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