

P6 P6 P6 P6 P6 P6 P6 F

Code No: 137CQ

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, December - 2019

FLEXIBLE A.C. TRANSMISSION SYSTEMS

(Electrical and Electronics Engineering)

P6 P6 Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B. Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

P6 P6 P6 PART - A P6 P6 P6 F

(25 Marks)

- 1.a) What is the need for FACTS Controllers? [2]
- b) Write some of the applications of FACTS controllers. [3]
- c) Explain basic principle of voltage source converter. [2]
- d) Brief the concept of pulse width modulation. [3]
- e) What is the basic principle of reactive power generation? [2]
- f) Write Objectives of Shunt Compensation. [3]
- g) Draw the VI characteristics of SVC. [2]
- h) Define Static synchronous compensator. [3]
- i) Enumerate the necessity for Series Compensation. [2]
- j) Name the different modes of TCSC. [3]

P6 P6 P6 PART - B P6 P6 P6 F

(50 Marks)

- 2.a) List out various FACTS controllers with their control attributes.
- b) Write down the importance of controllable parameters. [5+5]
- OR
- 3.a) What are the factors which limit the loading capabilities of transmission line?
- b) Describe the importance of different types of FACTS controllers. [5+5]
- 4. With a neat sketch, explain about full wave voltage source bridge converter. [10]
- OR
- 5.a) Compare current source converter with voltage source converter.
- b) Explain the principle of 3-level voltage source converter. [5+5]
- 6. Discuss the terms in detail:
  - a) Compensator Requirements
  - b) Power Oscillation Damping. [5+5]
- OR
- 7.a) With a neat sketch, explain the working of hybrid var generators.
- b) Write short notes on Improvement of Transient Stability. [5+5]

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- 8.a) Why the static compensator is not used as a perfect terminal voltage regulator?  
b) Compare SVC with STATCOM.

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9. Classify the dynamic behavior of the compensator in the normal compensation and draw the V-I characteristics of the STATCOM. [5+5]  
[10]

- 10.a) Build a circuit diagram and explain about the working of TCSC.  
b) What are the advantages and applications of GSC?

OR  
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11.a) What is the basic idea behind series capacitive compensation in detail?  
b) Differentiate between TSSC and TCSC. [4+6]  
[10]

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