

**SUBJECT CODE:- 421**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**B.E.(EEE/EEP/EE) Examination Nov/Dec 2015**  
**Elective-I: Flexible AC Transmission System**  
**(Revised)**

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

- N.B
- i) Q.No.1 &Q.No.6 are compulsory.
  - ii) Attempt any two questions from each section from the remaining questions.
  - iii) Assume suitable data, wherever necessary.

**Section- A**

- |     |   |          |
|-----|---|----------|
| Q.1 | Solve <u>any five</u> questions.  | 10       |
|     | <ol style="list-style-type: none"> <li>i) How is reactive power controlled in the electrical networks?</li> <li>ii) What is the TCSC?</li> <li>iii) What are different types of losses in STAT COM?</li> <li>iv) What is the TCR?</li> <li>v) What are different methods of facts controllers?</li> <li>vi) What are the different types of hybrid VAR generators?</li> <li>vii) What types of harmonics present in the O/P of 1<math>\emptyset</math> bridge converters?</li> <li>viii) Define the SVC.</li> </ol> |          |
| Q.2 | <ol style="list-style-type: none"> <li>a) Explain the need of transmission line inter connection.</li> <li>b) What are the possible benefits from facts technology?</li> </ol>  | 08<br>07 |
| Q.3 | <ol style="list-style-type: none"> <li>a) Explain midpoint voltage regulation for line segmentation for series compensators.</li> <li>b) Explain the functional control of TCR &amp; TSR.</li> </ol>  | 08<br>07 |
| Q.4 | <ol style="list-style-type: none"> <li>a) Explain the working of 3<math>\emptyset</math> full wave bridge converter.</li> <li>b) Draw control scheme of STATCOM and explain.</li> </ol>   | 08<br>07 |
| Q.5 | <ol style="list-style-type: none"> <li>a) Explain the merits and demerits of hybrid compensators.</li> <li>b) Explain how the voltage stability &amp; transient stability control done in shunt compensation.</li> </ol>  | 08<br>07 |

**Section -B**

- |     |   |    |
|-----|---|----|
| Q.6 | Solve <u>any five</u> questions   | 10 |
|     | <ol style="list-style-type: none"> <li>i) Define passive &amp; active VAR control.</li> <li>ii) List the different constraints available on UPFC?</li> <li>iii) What are factor affecting the performance of SVC?</li> <li>iv) What is meant by system compensation?</li> <li>v) What are causes for voltage instability?</li> <li>vi) Write the application of SVC.</li> <li>vii) List out the different causes for capacitive region in the different TCSC reactance constraints</li> <li>viii) How TCBR is used to improve the transient stability?</li> </ol> |    |

Q.7	a) Explain how series compensation can be used for power oscillation damping.	08
	b) How voltage stability at load bus. Can be achieved using series compensation.	07
Q.8	a) Explain the basic concept of phase angle regulator with the help of pharos diagram.	08
	b) Explain the operation of a continuously controllable tap changer.	07
Q.9	a) What is NGH- SSR damping scheme explain with circuit diagram.	08
	b) Explain the basic operation of IPFC.	07
Q.10	a) Explain GTO thyristor controlled series capacitor.	08
	b) Explain use of TCBR for power oscillation damping.	07