

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**SECOND SEMESTER M.TECH DEGREE EXAMINATION, MAY 2016**

**Electrical & Electronics Engineering**

**(Power Systems)**

**04EE6416—Flexible AC Transmission Systems**

Max. Marks : 60

Duration: 3 Hours

**PART A**

*Answer All Questions*

*Each question carries 3 marks*

1. Explain the objectives of FACTS controllers in the power system network.
2. Draw the V-I Characteristics of STATCOM.
3. What is regulation slope? What are the reasons for regulation slope?
4. Explain TSSC type of series controller with a neat sketch.
5. What do you mean by SSR?
6. Explain the basic configuration of Static Synchronous Compensator.
7. Explain the basic UPFC control scheme.
8. Give any three applications of IPFC.

**PART B**

*Each question carries 6 marks*

9. With a neat schematic diagram, explain the various basic types of FACTS controllers in detail  
OR
10. Discuss the (i) Transient stability improvement; and (ii) voltage stability enhancement in shunt compensation line.
11. What are the objectives of shunt compensation?  
OR
12. Explain how shunt compensation can be achieved with ideal midpoint reactive compensators. What is the effect of multi point segmentation on line performance?
13. Derive the transfer function and explain the dynamic performance of static var compensators.  
OR
14. Give a detailed account on the working of a STATCOM. Discuss the advantages of using multi level converters in a STATCOM.
15. Explain the working principle of TCSC.  
OR
16. Explain impedance Vs delay angle characteristics of TCSC.
17. Explain how SSR can be mitigated in a power system.  
OR
18. Give the functional control scheme for a SSSC.
19. Compare UPFC to series compensators.  
OR
20. Explain the working principle and characteristics of IPFC.