

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), Nov.-Dec. 2015

B. Tech in Electrical Engineering, Semester VII

Roll No.....

EE725: Flexible AC Transmission System

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
 2. Assume suitable data wherever required and mention it clearly.
 3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.
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- Q.1A Short answer type questions (10 questions @ 1 mark) 10
- i. Define reactive power.
 - ii. What is the significance of power factor?
 - iii. Define FACTS.
 - iv. Draw the basic circuit of TCR.
 - v. What is SVC?
 - vi. List the one objective of SVC.
 - vii. What is series compensation?
 - viii. List the one objective of reactive power compensation.
 - ix. Draw the basic circuit of STATCOM.
 - x. List one TCSC loss?
- Q.2 Short answer type questions (4 questions @ 2.5 marks) 10
- i. What are the conventional control mechanisms for voltage control?
 - ii. What are the factors which limit loading capability?
 - iii. List the various functions of SSSC.
 - iv. Why VSC is preferred over CSC in FACTS?
- Q.3A Explain with necessary diagrams the analysis of uncompensated transmission line. 05
- Q.3B Explain the role of FACTS devices in reactive power compensation. 05
- Q.4A Explain about the performance of SVC in controlling voltage in a power system. 05
- Q.4B By using power angle curve explain how by changing the value of line impedance the maximum amount of active power flow will change? 05
- Q.5A Briefly describe the way by which the transient stability is enhanced due to static VAR compensator. 05
- Q.5B Explain the reactive power compensation at the sending, midpoint and receiving ends of the transmission lines. 05

Q.6A	HVDC OR FACTS, which is best and why?	05
Q.6B	Provide the brief description of shunt controllers with neat diagrams.	05
OR		
Q.6B	Provide the brief description of series controllers with neat diagrams.	05
Q.7A	Explain why present transmission system with capacitive series compensation is prone to SSR.	05
Q.7B	With help of power angle curve explain how transient stability is improved with the series controllers.	05
OR		
Q.7B	Draw V-I characteristics and losses for TCSC.	05
Q.8A	Explain with a neat sketch the various modes of operation of TCSC.	10
Q.9A	What do you mean by PWM converter? Draw proper diagram. Explain working. What are the advantages of PWM technique?	2+3+3+2
Q.9B	Show a comparison between STATCOM and SVC on the basis of 1. Response time, 2. Capability to exchange real power, 3. Physical size and installation.	4+4+2
OR		
Q.9B	Show a comparison between STATCOM and SVC on the basis of 1. V-I and V-Q characteristics, 2. Transient stability.	6+4