Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech**
PEEE5409

7th Semester Back Examination 2018-19
FLEXIBLE AC TRANSMISSION SYSTEM
BRANCH : EEE, ELECTRICAL
Time : 3 Hours
Max Marks : 70
Q.CODE : E447

Answer Question No.1 which is compulsory and any FIVE from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions :** **(2 x 10)**

a) Write two uses of Facts technology in HVDC?
b) Explain the thermal capability of an overhead line?
c) Discuss the stability issues that limit the transmission capability?
d) State the objectives of voltage and phase angle regulators?
e) What are the objectives of series compensation?
f) Compare thyristor and GTO?
g) What are the types of FACTS controller?
h) Compare the conventional series controller with the advanced series controller(IPFC)?
i) What is the best location for SVC? Justify.
j) What are the advantages of IPFC over UPFC?

Q2 **a)** Explain the active and reactive A.C power flow control and dynamic stability with phasor diagram for a transmission line? **(5)**
b) Write down the benefits from FACTS controllers in terms of control attributes? **(5)**

Q3 **a)** What are the objectives of shunt compensation? Explain how the transient stability improves using equal area criterion? **(5)**
b) Explain the working of single phase Thyristor -switched capacitor(TSC) with associated waveforms? **(5)**

Q4 **a)** What are the objectives of shunt compensation? Explain the midpoint voltage regulation for line segmentation? **(5)**
b) Explain the Basic GTO Thyristor-controlled series capacitor? **(5)**

Q5 **a)** Explain with necessary diagrams how the transient stability can be improved with a series FACTS controller? **(5)**
b) Explain the operating principles of power flow control by phase angle regulators with a neat diagram of power vs angle characteristics? **(5)**

Q6 **a)** Explain the principle of operation of interline power flow controllers (IPFC) with a neat diagram? **(5)**

b) Draw and explain briefly the generalized and multifunctional IPFC module with comprehensive real and reactive power flow control capabilities for a multiline transmission system? **(5)**

Q7 Draw the diagram of a UPFC and discuss the detail purpose of the two back to back voltage source converters, and also discuss the transmission control capabilities of UPFC using phasor diagrams? **(10)**

Q8 **Write short answer on any TWO :** **(5 x 2)**

a) STATCOM with its V-I Characteristic

b) Compare SVC and STATCOM with V-I and V-Q Characteristic

c) Application of UPFC

d) Switching Converter Type Series Compensators (SSSC)