GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

RN19002007

Registration No:

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M.TECH 3rd SEMESTER REGULAR EXAMINATIONS, NOV / DEC 2019

MPEPE3012 – FACTS AND CUSTOM POWER DEVICES

(Power Electronics)

Time: 3 Hours **Max Marks : 70**

PART-A **(10 X 2=20 MARKS)**

1. Answer the following questions.

a) Define Sub synchronous resonance
b) What is the need of using power electronics based regulators.
c) Give the block diagram for a basic IPFC control scheme
d) Draw the VI characteristics of SVC.
e) What is PWM converter &what are its advantages
f) What are the objectives of shunt compensation
g) What are the different methods to control how of power in a parallel path in electrical power systems
h) What are the advantages of GCSC?
i) What is IPFC?
j) What are static VAR generators?

PART-B **(5 X 10=50 MARKS)**

Answer any five questions from the following.

2.a	With a neat circuit diagram and waveforms, explain the operation of full wave bridge converter.	**5**
b	Discuss details about different Configuration of SVC.	**5**
3.a	Write Short notes on static VAR generators.	**5**
b	With phasor diagram and power-angle curves, discuss midpoint voltage regulation of a transmission line.	**5**
4.a	Describe the effect of series and shunt compensation at mid-point of the line.	**5**
b	List different series FACTS converters. With neat circuit diagrams, discuss the operation of Thyristor switched series capacitor (TSSC), and thyristor controlled series capacitor (TCSC).	**5**
5.a	Define UPFC. Derive the modeling of UPFC for power flow studies.	**5**
b	Explain the transient stability enhancement and power oscillation damping of SMIB system with SVC connected at the mid-point of the line.	**5**
6.a	Explain the basic concept of voltage regulator with the help of a phasor diagram.	**5**
b	Explain the operation of variable impedance type static var generators.	**5**
7.a	What are the advantages of three-phase converters over single-phase converters?	**5**
b	Analyse the modeling of TCSC to enhance the stability of the system.	**5**
8 a	What is the importance of pulse number of a converter? Discuss the transformer connections for 12 pulse and 24 pulse operation of a converter.	**5**
b	Explain the basic concept of phase angle regulator with the help of a phasor diagram.	**5**

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