



GIET UNIVERSITY, GUNUPUR – 765022
M. Tech. (Third Semester) Examinations, December – 2022
MPEPE3012– FACTS AND CUSTOM POWER DEVICES
(POWER ELECTRONICS)

Time: 3 hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A

(2 x 10 = 20 Marks)

	CO#	Blooms Level
Q1. Answer all questions		
a. Explain about shunt inductive compensation?	CO1	2
b. Write the benefits of FACTS technology in terms of convenience?	CO1	3
c. List out various methods of VAR generation	CO1	2
d. Mention any two differences between VSC and CSC ?	CO2	1
e. Mation any two Shunt compensation devices?	CO2	2
f. What limits the loading capability of a transmission line?	CO3	2
g. Write a short note about Power oscillation damping?	CO1	3
h. List out the functions of SSSC?	CO3	1
i. What are the effects of min reactive power in the system?	CO3	4
j. What is harmonic mitigation	CO4	2

PART – B

(10 x 5 = 50 Marks)

Answer ANY FIVE questions

	Marks	CO#	Blooms Level
2. a. In order to control real and reactive power explain how to inject voltage in series with the line?	5	CO1	2
b. How amount of power can be controlled in mesh connected AC power system?	5	CO1	3
3.a. Explain how the power flow can be controlled through HVDC and FACTS technologies?	5	CO1	3
b. Explain the working principle and V-I characteristics of SVC ?	5	CO2	2
4. a. Explain the STATCOM operation with its operating characteristics?	5	CO2	4
b. Explain the performance and operating characteristics of TCR and TSR.	5	CO2	2
5.a. Describe the primary effect of series capacitor in reducing inductive reactance?	5	CO3	2
b. What are the objectives of voltage and phase angle regulators?	5	CO3	4
6. a. Explain the concept of GTO Thyristor-Controlled Series Capacitor (GCSC)	5	CO3	5
b. Draw the V-I characteristics of Static Synchronous Series Compensator (SSSC) and explain with a neat sketch?	5	CO3	4
7.a. By controlling the magnitude of voltage how reactive power can be controlled?	5	CO4	3
b. Explain the effect of injecting voltage in quadrature with the line current on control of power factor?	5	CO4	5
8. a. Discuss the block diagram of IPFC control scheme?	5	CO4	2
b. How an UPFC scheme can be implemented using two back to back VSC. Explain with a neat sketch?	5	CO4	3

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