

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***M.E DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***Third Semester**Power Systems Engineering***PPST2431 – HVDC and FACTS***Regulations – 2024**Duration : 3 Hrs**Maximum : 100 Marks****PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)***

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Name the HVDC Transmission in India.	L1	1	2
2.	Classify the FACTS devices to control the line power flows.	L3	1	2
3.	Analyze the characteristics of SVC.	L4	2	2
4.	Identify the factors to be considered for designing SVC to regulate mid-point voltage.	L4	2	2
5.	List some faults that can occur in converters.	L1	3	2
6.	Identify the assumptions made to simplify the analysis of Graetz circuit.	L1	3	2
7.	Classify the components of STATCOM.	L4	4	2
8.	What is meant by UPFC?	L1	4	2
9.	Give the dc system model.	L2	5	2
10.	List the assumptions made in DC load flow.	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i Compare fixed series compensation and fixed shunt compensation.	L2	1	8
	ii Compare the basic procedure for controller design.	L2	1	8
	Or			
	b i Compare AC & DC transmission.	L4	1	8
	ii Explain the application of DC transmission.	L4	1	8
12.	a Evaluate the transient stability enhancement of SMIB system using SVC.	L5	2	16
	Or			
	b Write the operation in detail about SVC-SVC interaction.	L2	2	16
13.	a Describe with the help of neat diagram & wave forms, the operation of 6 pulse bridge converters with delay angle α and without overlap. Derive the expressions for its dc voltage stating the assumptions mode.	L2	3	16
	Or			
	b An HVDC link delivers DC power with AC line voltage to the rectifier being 180 kV and that at the inverter being 165 kV. Taking $\alpha = 15^\circ$ and $\gamma = 20^\circ$, R_{c1} and $R = 10 \Omega$ and $R=5\Omega$. Estimate the DC voltage at both the ends and the current in the DC link.	L4	3	16

14.	a	Explain the operation of SSSC. Compare the performance of SSSC with that of fixed series capacitor compensation.	L2	4	16
		Or			
	b	Write short notes on operation of STATCOM with an aid of block diagram.	L2	4	16
15.	a	Explain circuit of modular multi level converter with relevant waveforms.	L4	5	16
		Or			
	b	Discuss Offshore HVDC integration System Studies.	L2	5	16