QP Code: RD17001025 Reg. No | | | | | | | | | | | AR 17

GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, December – 2020

(Seventh Semester)

BEEPC 7020 / BELPC 7020 – FACTS

(EE & EEE)

Time: 2 hrs Maximum: 50 Marks

The figures in the righthand margin indicate marks.

PART – A: (Multiple Choice Questions) **(1 x 10 = 10 Marks)**

Q.1. Answer ***ALL*** questions		[CO#]	[PO#]
a.	FACTS devices used in (i) Generation (ii) AC transmission (iii) DC transmission (iv) None	[CO 1]	[PO 3, 4]
b.	FACTS devices are generally used to compensate the following of the transmission line (i) Reactive power (ii) active power (iii) apparent power (iv)None	[CO2]	[PO 3, 4]
c.	By means of varying the _____ a FACTS controller can control the power flow as required (i)Power angle (ii) Capacitance (iii) Frequency (iv) Power factor	[CO2]	[PO 3, 4]
d.	Which is the shunt compensation device (i) TCSC (ii) SSSC (iii) UPFC (iv)SVC	[CO 3]	[PO 3, 4]
e.	STATCOM is_____ regulating device. (i) Current (ii) Voltage (iii) Current and Voltage (iv) Power factor	[CO3]	[PO 3, 4]
f.	List of Static Shunt compensators. (i) TCR, TSR, TSSC, TSC (ii) TSSC, TCSC, SVG, SVS (iii) SVG, SVC, TCR, TSR (iv) GCSC, TCSC, TSSC	[CO3]	[PO 3, 4]
g.	The main Objective of series compensation (i) It improves the power factor (ii) It reduces the fault currents (iii) Reduce the voltage drop over long distance (iv) None	[CO 4]	[PO 3, 4]
h.	TCSC is a (i) Shunt compensation device (ii) Series compensation device (iii) Both a & b (iv) None of the above	[CO4]	[PO 3, 4]
i.	Which is the combined series-shunt compensation device (i) TCSC (ii) SSSC (iii) UPFC (iv)SVC	[CO 5]	[PO 3, 4]
j.	UPFC stands _____. (i) Unified power flow controller (ii) Unified power flow converter (iii) Union power flow controller (iv) Union power flow converter	[CO 5]	[PO 3, 4]

PART – B: (Short Answer Questions) (2 x 5 = 10 Marks)

Q.2. Answer ***ALL*** questions	[CO#]	[PO#]
a. What is the necessity of compensation?	[CO 1]	[PO 3, 4]
b. List the objectives of FACTS controllers in the power system network.	[CO 2]	[PO 3, 4]
c. Define the term Static VAR compensator.	[CO 3]	[PO 3, 4]
d. How the reactive power compensation is done using STATCOM	[CO 3]	[PO 3, 4]
e. How is the variation of capacitive reactance achieved in TCSC?	[CO 4]	[PO 3, 4]

PART – C: (Long Answer Questions) (6 x 5 = 30 Marks)

Answer ***ANY FIVE*** questions	Marks	[CO#]	[PO#]
3. What is the need for transmission interconnections? Explain	**(6)**	[CO 1]	[PO 3, 4]
4. What are the major issues in AC power transmission? Explain, how they addressed using FACTS devices	**(6)**	[CO 2]	[PO 3, 4]
5. What are the objectives of static shunt compensation? Discuss the improvement of transient stability with midpoint voltage regulation.	**(6)**	[CO 3]	[PO 3, 4]
6. Write a short note on transient stability enhancement using STATCOM and SVC	**(6)**	[CO 3]	[PO 3, 4]
7. Discuss the concept of series capacitive compensation with necessary expressions	**(6)**	[CO 4]	[PO 3, 4]
8. Explain the working of thyristor-controlled series capacitor (TCSC).	**(6)**	[CO 4]	[PO 3, 4]
9. What are the advantages of combined shunt and series controller than the individual controllers?	**(6)**	[CO 5]	[PO 3, 4]
10. Differentiate between unified control and coordinated control schemes.	**(6)**	[CO 5]	[PO 3, 4]

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