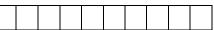
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Reg. No.



Time: 3 hrs

GIET MAIN CAMPUS AUTONOMOUS GUNUPUR - 765022

B. Tech Degree Examinations, November – 2021

(Seventh Semester)

BELPE7021 / BEEPE7021 – FLEXIBLE AC TRANSMISSION SYSTEM

(EE / EEE)

Maximum: 100 Marks

1 111			num: 100	IVIALKS
		ver ALL Questions		
-	8	ight hand margin indicate marks.		
I	PART – A: (Multiple Choice Questions)	(2 x 10) =20 Ma	rks)
-	Answer ALL questions		[CO#]	
a.	Voltage control means		CO1	PO1
	(i) Boosting the feeder voltage	(ii) Reducing the line voltage under over voltage conditions		
	(iii) Keeping the voltage level within	(iv) None		
	the allowable limits.			
b.	FACTS devices are generally used transmission line	for to compensateof the	CO1	PO1
	(i) reactive power	(ii) active power		
	(iii) apparent power	(iv)all the above		
c.	Transmission efficiency increases as		CO2	PO1
	(i) voltage and power factor both	(ii) voltage and power factor both		
	increase	decrease		
	(iii) voltage increases but power	(iv) voltage decreases but power		
	factor decreases	factor increases.		
d.	SVC and STATCOM are	devices.	CO2	PO1
	(i) series	(ii) series and shunt		
	(iii) shunt and series	(iv) shunt		
e.	STATCOM is regula	ating device	CO2	PO1
	(i) Current	(ii) Voltage		
	(iii) Current and Voltage	(iv) Power factor		
f.	The main Objective of series compens	sation	CO3	PO1
	(i) It improve the power factor	(ii) It reduces the fault currents		
	(iii) Reduce the voltage drop over	(iv) None		
	long distance			
g.	Transmission Interconnection is done	for	CO1	PO1
U	(i) economic reasons	(ii) to reduce the cost of electricity		
	(iii) to improve reliability of power	· · · · · · · · · · · · · · · · · · ·		
	supply			
h.	Unified Power Flow Controller (UPF	C) is combination of	CO4	PO1
	(i) STATCOM and TCSC	(ii) SSSC and TSC		
	(iii) STATCOM and SSSC	(iv) TSSC and TCR		
i.	Objectives of Load compensation		CO4	PO1
	(i) Power-factor correction.	(ii) Improvement of voltage		
		regulation.		
	(iii) Load balancing	(iv) All of these		
j.	List of Static Series compensators.		CO3	PO1
J.	(i) TCR, TSR, TSSC, TSC	(ii) GCSC, TCSC, TSSC		•
	(iii) TSSC, TCSC, SVG, SVS	(iv) SVG, SVC, TCR, TSR		
		(,,,,,,,		

PART – B: (Short Answer Questions)

(2 x 10=20 Marks)

Q.2. Answer ALL questions		[CO#]	[PO#]
a.	Define FACTS controllers as per IEEE definition?	CO1	PO1
b.	List out various types of power flow in Ac system?	CO1	PO1
c.	What are the objectives of shunt compensation?	CO1	PO1
d.	Why VSC is preferred over CSC?	CO2	PO1
e.	Differentiate between an UPFC & IPFC	CO4	PO1
f.	Explain about natural commutation?	CO3	PO1
g.	Explain the concept of reactive power in brief?	CO2	PO1
h.	Explain about Capacitive series compensation?	CO2	PO1
i.	What are the effects of injecting voltage in series with a transmission line?	CO1	PO1
j.	List out various series compensators?	CO1	PO1

PART – C: (Long Answer Questions)

(15 x 4= 60 Marks)

Answer ALL questions		Marks	[CO#]	[PO#]		
	Explain the working principle & V – I characteristics of STATCOM?	10	CO2	PO1		
b.	Explain the basic control of TCR?	5	CO1	PO1		
(OR)						
c.	Explain what do you mean by Variable Impedance type FACTS devices?	5	CO1	PO1		
d.	Explain the power flow and dynamic stability considerations of a transmission interconnection	10	CO2	PO1		
4. a.	Explain with a neat sketch and various modes of operation of TCSC type of series controller	12	CO3	PO1		
b.	How series FACTS devices respond to the problem of Sub synchronous resonance	3	CO3	PO1		
(OR)						
c.	Explain how real and reactive power flow control is achieved using quadrature booster.	10	CO3	PO1		
d.	Explain the concept of thyristor control voltage regulator?	5	CO3	PO1		
5. a.	Explain how series compensation can be used for power oscillation damping	8	CO3	PO1		
b.	How amount of power can be controlled in Mesh connected ac power system?	7	CO1	PO2		
(OR)						
c.	Draw the neat sketch of SVC and explain its operating principle?	10	CO1	PO1		
d.	Explain various operational characteristics of GCSC?	5	CO3	PO1		
6. a.	Discuss the block diagram for IPFC control scheme	10	CO4	PO1		
b.	Describe briefly steady state stability and transient stability? (OR)	5	CO1	PO1		
c.	Write short notes on sub synchronous harmonics and sub synchronous frequency	8	CO2	PO1		
d.	Differentiate between TCSC & SSSC?	7	CO3	PO1		