Q.P. Code: 16EE216								<b>R1</b>	6						
Reg.	No:														
MSI Time:	SIDDF E	IARTI 3.Tech	H INS III Ye	TITU ar I S	JTE O emest LINE (C	F EN (AU cer Su AR C	GINE TON pplen ONT	CERIN OMOU nentar ROL S EEE &	G & T JS) y Exa SYSTI ECE)	FECH minat EMS	INOL	OGY:: August	PUTT -2021 Max	UR	60
Time.	J nouis			(	Answe	r all E	ive II	nite 5	v 12 =	60 M	arke)		IVIUA.	WIGINS	. 00
121	a Deri b Dist	ve the inguisl	transfe 1 betw	er fun een B	ction f	for A.(	UN C serv n Red	NIT-I o moto uction OR	or with Techn	neat of ique a	diagra and Si	m. gnal Flo	ow Graj	oh.	6M 6M
2	Obtain	n the tr	ansfer	funct	tion of	the sy	vstem	whose	signal	flow	graph	is show	vn belo	w.	12M
	•	1	¥2		-H <sub>5</sub>	G <sub>2</sub>	X4		Jx3	G <sub>4</sub>		) -H <sub>4</sub>	x <sub>7</sub>		
3	List ou Peak ti	t the tin me and	ne doi l Peak	main s	specifi shoot.	cation	UN s and	<b>NIT-II</b> derive	the ex	press	ions fo	or Rise	time,		12M
4	a Wha b The	at is the follow	e chara	acteris stem	stic equ with u	uation nity fe	? List edbac	OR the sig	nifica re K &	nce of z T are	f chara e cons	cteristic tant.	e quati	ion.	4M 8M
	S(1 Dete from	$\frac{K}{+ST}$ ermine 75%	the factor	ctor b %?syst	y whic tem ha	h gair	1 'K' s	should	be mu	ıltiplie	ed to re	educe th	ne overs	shot	
							UN	IT-II							
5	a The G	open le $f(s) =$	sop tra $\frac{1}{(S^3)}$	$\frac{1}{1}$ K (3) $\frac{1}{1}$ + $aS$	functi $\frac{(s+1)}{(s+2)^2}$	on of (+1)	a unit	y feed	oack s	ystem	is giv	en by			8M
	Dete	ermine	the va	lue of	f K and	l "a" s	so that	the sy	stem o	oscilla	tes at	a freque	ency of		
	2rad b Expl the r	/sec lain the oot loc	e effec ei.	t of a	dding J	ooles a	and ze	eros to	charao	eterist	ic equ	ation or	n stabili	ty of	4M
6	Sketcl	n the ro	ot loc	us of	the sv	stem v	whose	onen l	oon tr	ansfer	funct	ion is			12M
	G(	(s) H	(s) =	$\frac{K}{S(S-1)}$	(S+1.5) +1)(S-	5) + 5).	1030	openi	oopu		runet	1011 10			

UNIT-IV

7	Draw the Bode plot for the following Transfer Function	12M
	C(s) H(s) = 36(0.1S+1)	
	$G(S) \Pi(S) = \frac{1}{S^2(0.2S+1)(0.02S+1)}$	
	From the bode plot determine (a) Gain Margin (b) Phase Margin (c) Comment on the stability	
	OR OR	
8	Draw the Nyquist plot for the system whose open loop transfer function is,	12M
	$\mathbf{G}(\mathbf{s})\mathbf{H}(\mathbf{s}) = \frac{K}{S(S+2)(S+10)}.$	
	Determine the range of K for which closed loop system is stable. UNIT-V	2
9	Determine the Solution for Homogeneous and Non homogeneous State equations. OR	12M
10	<ul><li>a Define state, state variable, state equation.</li><li>b Derive the expression for the transfer function from the state model.</li></ul>	6M 6M
	$\dot{X} = Ax + Bu$ and $y = Cx + Du$	
	*** END ***	
	Littl out the fifthe domain speetfrontions and derive the expressions for Rise trave. Peak time and Peak overshold.	
	Determine the factor by which gain '17' should be multiplied to reduce the overshot frein 7.5% to 2.5% System has	

betermine the value of K and "a" so that the system oscillates at a frequency multies

sy first the effect of adding polics and zeros to characteristic equation of sta sy first loci.