		Reg. No. :								
		Question Pa	per C	ode:	969	002				
	B.E	./B.Tech. DEGREE EX	AMIN	ATIO	N, M	AY 20)22			
		Sixth Se	emester	•						
		Chemical E	nginee	ring						
	19UC	H602 – Process Instrum	entatio	n Dyr	namic	s & Co	ontrol			
		(Regulation	ons 201	9)						
Dur	ation: Three hours					Ν	Maxin	num:	100	Marl
		PART A - (10 x	1 = 10) Mar	ks)					
1.	A process control sy	vstem consists of								CO
	(a) 2 elements	(b) 4 elements	(c)	6 eler	nents		(d)	10 el	emen	its
2.	What is a process co	ontrol system?								CO
	(a) System to check the voltage									
	(b) System to keep the parameters at highest value									
	(c) System to maintain the parameters constant									
	(d) System to keep the parameters at zero value									
3.	The system with the	open loop transfer func	tion 1/	s(1+s)) is:					CO
	(a) Type 2 and order	r 1		(b)Ty	pe 1 a	and or	der 1			
	(c)Type 0 and order 0 (d) Type 1 and order 2									
4.	In a stable control system backlash can cause which of the following?							CO		
	(a) Under damping			((b)Ov	ver dan	nping			
	(c)Poor stability at reduced values of open loop gain (d) Low-level oscillations									
5.	A control system in on the output is kno	which the control action wn as	n is son	nehov	v dep	endent	ţ			CO
	(a) Closed loop syst	em	(b) Sem	i clos	sed loc	op sys	tem		
	(c) Open system		(d) Non	feed	back c	ontro	l syst	em	

6.		at is the value ems?	of steady state er	ror in closed loop control	С	01- U		
	(a) Z	Zero	(b)Unity	(c) Infinity (d) Unpredict	ctable			
7.		a stable closed l ays be:	loop system, the gain	at phase crossover frequency	should C	01 - U		
	(a) <	< 20 dB	(b) < 6 dB	(c) > 6 dB	(d) >	0 dB		
8.	For	Nyquist contour	, the size of radius is		С	01 - U		
	(a) 2	25	(b) 0	(c) 1	$(d) \infty$			
9.	In a	control system	the output of the cont	roller is given to	С	01 - U		
	(a) <i>A</i>	Amplifier	(b)Sensor	(c)Final control element	(d) Comparato	or		
10.	Reg	Regenerative feed forward implies feedback with			С	CO1- U		
	(a) (Oscillations	(b)Step input	(c)Negative sign (d) Positive sign	ı		
			PART – B (5x 2= 10 Marks)				
11.	What are the Four steps of the mathematical modeling process?				С	CO1- U		
12.	What is lead lag control system?				С	CO1- R		
13.	What are the principles of electronic controller?			CO1- U				
14.	What is the importance of frequency response?				С	CO1- R		
15.	What is the importance of control system?			CO1- U				
			PART C - (5	x 16 = 80 Marks)				
16.	(a)	Discuss briefly	about the Formulatin Or	ng Process Models.	CO1 -U	(16)		
	(b) Transform the following equation and obtain the ratio of output to input, Y(s)/X(s):				o CO2- App	(16)		
		4.d2y/dt2	+ 2.dy/dt + 3.y = 5x					
17.	(a)	Elaborate abou control.	t the linearization and	d its application in process	CO1 -U	(16)		
			Or					
	(b)	non-interacting	g liquid level tanks ha	in kc is used to control two aving time constants T=1 & stem. Determine stability of	CO2 -App	(16)		

18.	(a)	Describe briefly about the Closed loop control systems Or	CO1- U	(16)
	(b)	The transfer function of a negative feedback control system is given as:	CO2- App	(16)
		$G(s)=Kce^{-0.4s/(s+1)}(s+0.5)$ Find the root locus.		
19.	(a)	Describe briefly about the control system design by frequency response techniques.	CO1 -U	(16)
		Or		
	(b)	Derive briefly about the Nyquist Stability Criterion with her expression.	CO1 -U	(16)
20.	(a)	Explain briefly about the introduction to computer control of chemical processes.	CO1- U	(16)
		Or		
	(b)	Describe about the Inverse response of smith predictor controller.	CO1- U	(16)