

Dicipline:	EE	Semester: 6 <sup>th</sup>	Name of the Teaching Faculty: Jyoti Prakash Mohapatra	
Subject: control system Engineering	No of Days/Week Class Allotted: 4	Semester From date: 13.09.23 To date 23.05.23	No. of Weeks: 15	
WEEK	Class Day	Theory Topics		
	1st	classification of control system		
	2nd	open loop system & closed loop system		
	3rd	sfb comparison		
	4th	effects of feed back		
	5th			
	1st	standard test signal: step, ramp		
	2nd	parabole, impulse functions		
	3rd	sensitivity analysis		
	4th	transfer function		
	5th			
	1st	Impulse response		
	2nd	properties of transfer function		
	3rd	Advantages & Disadvantages of transfer function		
	4th	poles & zeroes of transfer function		
	5th			

WEEK	Class Day	Theory Topics
	1st	Simple problems of simple feedback network
	2nd	Mathematical modeling of electrical systems (R, L, C Analogue)
	3rd	Components of control system
	4th	Gyroscopes, synchros, tachometers
	5th	
	1st	DC servomotors, AC servomotors.
	2nd	Definition: Basic elements of block diagram
	3rd	Canonical form of closed loop systems
	4th	Rules for block diagram reduction
	5th	
	1st	Procedure for reduction of block diagram
	2nd	Simple problem for equivalent transfer function
	3rd	Basic definitions of signal flow graph
	4th	Properties of signal flow graph
	5th	

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WEEK	Class Day	Theory Topics		
	1st	Construction of signal flow graphs from Block diagram		
	2nd	Mason's gain formula		
	3rd	Simple problem in signal flow graph for network		
	4th	Time response of control system,		
	5th			
	1st	Standard test signal		
	2nd	Step signal, Ramp signal		
	3rd	Parabolic signal, Impulse signal		
	4th	Time response of first order system		
	5th			
	1st	Time response of first order system		
	2nd	Time response specification		
	3rd	Derivation of expressions for rise time		
	4th	Derivation of expressions for peak time		
	5th			



WEEK	Class Day	Theory Topics
	1st	Derivation of expression for $\% \text{ peak overshoot}$
	2nd	Derivation of expression for settling time
	3rd	Derivation of expression for steady state error
	4th	steady state error
	5th	
	1st	error constants
	2nd	Class test - I
	3rd	types of control system
	4th	steady state errors in type-0, type-1, type-2, type-3
	5th	
	1st	OMR test - I
	2nd	effect of adding pole and zero to transfer function
	3rd	Response with P & PD controller
	4th	Response with P, D & PID controller
	5th	

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WEEK	Class Day	Theory Topics		
	1st	Response with PD and PID controller.		
	2nd	Root locus concept		
	3rd	Construction of root loci		
	4th	Rules for construction of the root locus		
	5th			
	1st	Effect of adding poles and zeros to		
	2nd	effect of adding poles and zeros to		
	3rd	Correlations betw time response & frequency response		
	4th	Polar plots		
	5th			
	1st	Bode plots,		
	2nd	Asi plot and minimum phase system		
	3rd	computation of phase margin.		
	4th	computation of phase margin.		
	5th			




WEEK	Class Day	Theory Topics
	1st	
	2nd	
	3rd	
	4th	
	5th	
	1st	
	2nd	
	3rd	
	4th	
	5th	
	1st	
	2nd	
	3rd	
	4th	
	5th	