		PNS SCHOOL OF ENGINEERING AND TECHNOLOGY	
Branch: Electrical & ETC Engineering	Semester: 6TH	Name of the Lecturer: **Snigdha Dash**	
Subject: CSE	No of Classes Alloted in a Week: 6	Duration of Semester: 14.2.2023 - 23.5.2023	
Week	Class Day	Theory / practical Topic	
1st	1	**Fundamental of control system** - Classification of Control system	
	2	Open loop system & Closed loop system and Its comparison	
	3	Effects of Feed back	
	4	Standard test Signals (Parabolic, Impulse, Parabolic, Impulse Functions)	
	5	Servomechanism	
	6	**Mathematical model of a system** - Transfer Function, Impulse response	
2nd	1	Properties, Advantages & Disadvantages of Transfer Function	
	2	Poles & Zeroes of transfer Function, Simple problems of transfer function of network	
	3	Mathematical modeling of Electrical Systems(R, L, C, Analogous systems)	
	4	**Control system components** - Components of Control System	
	5	Gyroscope, Synchros, Tachometer	
	6	DC servomotors, Ac Servomotors	
3rd	1	**Block diagram algebra & signal flow graphs** - Basic Elements of Block Diagram	
	2	Canonical Form of Closed loop Systems	
	3	Rules for Block diagram reduction, Procedure for of Reduction of Block Diagram	
	4	Simple Problem for equivalent transfer function	
	5	Basic Definition in Signal Flow Graph, Properties of Signal Flow Graph	
	6	Construction of Signal Flow graph from Block diagram	
4th	1	Mason's Gain formula	
	2	Simple problems in Signal flow graph for network	
	3	Class Test - I	
4th	4	**Time response analysis** - Time response of control system.	
	5	Standard Test signal (Step signal, Ramp Signal)	
	6	Standard Test signal (Parabolic Signal, Impulse Signal)	
5th	1	Time response of second order system to the unit step input - Time response specification.	
	2	Expression for rise time, peak time, peak overshoot, settling time, steady state error	
	3	Steady state error & error constants.	
	4	Types of control system.[Steady state errors in Type-0, Type-1, Type-2 system]	
	5	Effect of adding poles and zero to transfer function.	
	6	Response with P, PI, PD and PID controller.	
6th	1	Internal Assessment	
	2	**Analysis of stability by root locus technique** - Root locus concept	
	3	Root locus concept	
	4	Construction of root loci.	
	5	Construction of root loci.	
	6	Rules for construction of the root locus	
7th	1	Rules for construction of the root locus	
	2	Rules for construction of the root locus	
	3	Rules for construction of the root locus	
	4	Effect of adding poles and zeros to G(s)	
	5	Effect of adding poles and zeros to H(s)	
	6	**Frequency response of system** - Correlation between time and frequency response	

8th	1	Polar plots
	2	Bode plots.
	3	All pass and minimum phase system
	4	Computation of Gain margin.
	5	Computation of phase margin
	6	Computation of phase margin
9th	1	Log magnitude versus phase plot
	2	Closed loop frequency response
	3	Closed loop frequency response
	4	**Nyquist plot** - Principle of argument
	5	Nyquist stability criterion.
	6	Niquist stability criterion applied to inverse polar plot
10th	1	Niquist stability criterion applied to inverse polar plot
	2	Effect of addition of poles and zeros to G(S) H(S) on the shape of Niquist plot
	3	Effect of addition of poles and zeros to G(S) H(S) on the shape of Niquist plot
	4	Assessment of relative stability
	5	Constant M and N circle
	6	Constant M and N circle
11th	1	Nicholas chart.
	2	Class Test - II
	3	Previous Year Question
	4	Previous Year Question
	5	Previous Year Question
	6	Previous Year Question

Signature of the

Lecturer

Signature of the

H.O.D.