

# Lesson Plan For Academic Session 2022-23

Discipline:- Electrical	Semester:- 6th	Name Of The Teaching Faculty:- Ganesh Pradhan
Subject:- Control System	No Of Days Per week Class Allotted:-5	No Of Weeks:-15
No. of week	No. of class	Topic to be taught
1 <sup>st</sup>	1	Classification of Control system
	2	Open loop system & Closed loop system and its comparison
	3	Continue
	4	Effects of Feed back
	5	Standard test Signals(Step, Ramp, Parabolic, Impulse Functions)
2 <sup>nd</sup>	6	Servomechanism
	7	Continue
	8	Transfer Function & Impulse response,
	9	Properties, Advantages & Disadvantages of Transfer Function
	10	Poles & Zeroes of transfer Function
3 <sup>rd</sup>	11	Simple problems of transfer function of network.
	12	Mathematical modeling of Electrical Systems(R, L, C, Analogous systems)
	13	Components of Control System
	14	Continue
	15	Gyroscope, Synchros, Tachometer, DC servomotors, Ac Servomotors.
4 <sup>th</sup>	16	Continue
	17	Continue
	18	Definition: Basic Elements of Block Diagram
	19	Canonical Form of Closed loop Systems
	20	Rules for Block diagram reduction
5 <sup>th</sup>	21	Procedure for of Reduction of Block Diagram
	22	Simple Problem for equivalent transfer function
	23	Basic Definition in Signal Flow Graph & properties
	24	Construction of Signal Flow graph from Block diagram
	25	Mason's Gain formula
6 <sup>th</sup>	26	Simple problems in Signal flow graph for network
	27	Continue
	28	Time response of control system.
	29	Standard Test signal- Step signal, Ramp Signal


	30	Parabolic Signal
7 <sup>th</sup>	31	Impulse Signal
	32	Impulse Signal
	33	Unit step response ,.
	34	Unit impulse response
	35	Time response of second order system to the unit step input.
8 <sup>th</sup>	36	Time response specification.
	37	Derivation of expression for rise time, peak time, peak overshoot, settling time and steady state error, Steady state error and error constants.
	38	Types of control system.[ Steady state errors in Type-0, Type-1, Type-2 system]
	39	Effect of adding poles and zero to transfer function, Response with P, PI, PD and PID controller.
	40	Root locus concept.
9 <sup>th</sup>	41	Continue
	42	Continue
	43	Construction of root loci.
	44	Continue
	45	Continue
10 <sup>th</sup>	46	Rules for construction of the root locus.
	47	Continue
	48	Continue
	49	Effect of adding poles and zeros to G(s) and H(s).
	50	Continue
11 <sup>th</sup>	51	Continue
	52	Correlation between time response and frequency response.
	53	Polar plots.
	54	Bode plots.
	55	Continue
12 <sup>th</sup>	56	Foundation
	57	All pass and minimum phase system.
	58	Continue
	59	Computation of Gain margin and phase margin.
	60	Continue
13 <sup>th</sup>	61	Log magnitude versus phase plot.
	62	Continue
	63	Closed loop frequency response.
	64	Principle of argument.
	65	Nyquist stability criterion.
14 <sup>th</sup>	66	Nyquist stability criterion applied to inverse polar plot.
	67	Continue

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	68	Effect of addition of poles and zeros to $G(S) H(S)$ on the shape of Niquist plot.
	69	Continue
	70	Assessment of relative stability.
15 <sup>th</sup>	71	Continue
	72	Constant M and N circle
	73	Continue
	74	Nicholas chart.
	75	Continue

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Teaching Faculty

  
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13.2.2023  
Principal

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