Discipline Diploma. Branch - Electrical.	Semester 6th.	Name of Faculty. Mr. A.K. Sahu.
Sub → Control System Engg.	No of day per week. 05 (4+1)	Semester from 10.02.2022 to 10.06.2022 No of Week. 15

Month	Week.	Class day	Topics.
	1st		① Fundamental of Control System
		1st	Classification of control System
		2nd	open loop system and closed loop System and its applica.
		3rd	Effect of feed Back.
		4th	standard test Signal.
		4th -	Step. Ramp. Parabolic, Impulse function.
		5th	Servo mechanism.
March	2nd.		② Mathematical Model of a. System.
		1st	Transfer function and Impulse response.
		2nd	properties, Advantages and Disadvantages of Transfer function.
		3rd	pole and Zero of Transfer function.
		4th	Simple problem of TF of Network
		5th	Mathematical Models of Electrical System.

		R L C, Analogous Systems
3rd.	③Control 1st	System Components, Component of Control Sytm.
	2nd	Gyroscope, Synchros,
	3rd	Tachometers, D.C. Servomotors
	4th.	A C Servomotors & Revision.
4th.		④Block Diagram Algebra and Signal Flow Graphs.
	1st	Definition, Basic Element of Block Diagram.
	2nd	Canonical form of closed loop Systems
	3rd.	Rules for Block diagram reduction
	4th.	procedure for of Reduction of Block diagram.
	5th	Simple problem for equivalent transfer function
~~1st~~	1st	Basic Definition in Signal Flow graph and properties.
~~1st~~	2nd	Construction of Signal Flow graph from Block diagram
	3rd	Mason's Gain Formula.
	4th.	Simple problem in Signal Flow graph for network

	5th.	Example Solve of Mechanical problem.
		⑤Time Response Analysis.
	1st	Time Response of Control System.
April.	2nd 2nd	Standard Test Signal ①Step signal, Ramp, parabolic
	3rd	Impulse Signal & Example Solved.
	4th.	Time Response of First order System with - Unit Step Response.
	5th	Unit Impulse response.
	1st	Time response of second order System to the unit step input
	2nd	Time response specification.
3rd.	3rd	Derivation of expression for rise time, peak time, peak overshoot
	4th	Settling time and steady state error, Steady state error, and error Constants.
	5th.	Types of Control System Steady state errors for Type-0 Type-1, Type-2 System.
	1st	Effect of adding poles and Zero to T.F.
4th	2nd	Response with P, PI, PD, and PID Controller.

	3rd (4th)	Analysis of Stability By Root Locus Technique.
	4th	Root R-Locus Concept.
	5th.	Root Locus Concept.
1st	1st	Construction of root locei
	2nd	Construction of root locei
	3rd	Rules for Construction of the root locus,
	4th	Effect of adding poles and Zeros to G(S) and H(S)
	5th.	Effect of adding pole and Zeros to G(S) and H(S).
		⑦ Frequence Response Analysis
May. 2nd	1st	Correlation between time responce and frequency Responce.
	2nd	polar plots.
	3rd	Example of polar plots.
	4th.	Bode plots.
		Solve Question of Bode plot.
	5th.	All pass and minimum phase System.
3rd	1st	Computation of Gain margin and phase margin.
	2nd	Solve Example of Gain & phase margin.
	3rd	Logarithmic Vs magnitude versus phase plot.

	4th	Closed loop frequency response.
	5th.	Solve Example of Frequency Response of Analysis.
		⑧ NYQUIST-PLOT.
4th.	1st	Principle of argument
	2nd	Nyquist Stability Criterion.
	3rd	Nigust Stability Criterion Applied to inverse polar plot.
	4th	Solve Example.
	5th.	Effect of addition of polar and Zero to G(S) H(S) on the Slope of Nigust plot.
	1st	Assessment of relative Stability
1st	2nd	Constant M & N circle.
	3rd	Constant M and N circle.
	4th	Nichalos chart.
June	5th	Example of Nichals Chart.
	1st	close Test,
2nd.		B