ACADEMIC SESSION : 2023-24

Discipline : Electrical Engg.	Semester : 6th	Name of the Teaching Faculty : Prabhudatta Pujapanda (Lecturer in Electrical Engg.)	
Subject : CONTROL SYSTEM ENGINEERING	No. of days / week class allotted	Semester From date: 16.01.24 to 26.04.24	No. of Period
Chapter	Class Day	Theory/ Practical Topics	
chapter-1 Fundamental of Control System	16.1.24	Review of block diagrams and transfer functions of multivariable systems.	1
	18.1.24	Review of block diagrams and transfer functions of multivariable systems.	1
	19.1.24	Construction of signal flow graph.	1
	22.1.24	Construction of signal flow graph.	1
	25.1.24	Construction of signal flow graph	1
Chapter-2 Mathematical Model of a System	29.1.24	Basic properties of signal flow graph.	1
	30.1.24	Signal flow graph algebra.	1
	1.2.24	Construction of signal flow graph for control system.	1
	2.2.24	Time response of control system.	1
	5.2.24	Time response of control system.	1
Chapter-3 Control System Components	6.2.24	Standard Test signal, Impulse Signal	1
	8.2.24	Step signal, Ramp Signal ,Parabolic Signal	1
	9.2.24	Time Response of first order system	1
	12.2.24	Unit step response ,Unit impulse response	1
	13.2.24	Unit step response ,Unit impulse response	1
	15.2.24	Time response of second order system to the unit step input.	1
	16.2.24	Time response specification.	1
	19.2.24	Time response specification.	1
	20.2.24	Derivation of expression for rise time, peak time, peak overshoot, settling time and steady state error.	1
	22.2.24	Steady state error and error constants.	1
Chapter-4 Block Diagram Algebra and Signal Flow Graph	23.2.24	Types of control system.[Steady state errors in Type-0, Type-1, Type-2 system]	1
	26.2.24	Effect of adding poles and zero to transfer function.	1
	27.2.24	Effect of adding poles and zero to transfer function.	1
	29.2.24	Response with P, PI, PD and PID controller.	1
	1.3.24	Response with P, PI, PD and PID controller.	1

Chapter-5 Time Response Analysis	4.3.24	Analysis of stability by root locus technique	1
	7.3.24	Analysis of stability by root locus technique	1
	11.3.24	Root locus concept.	1
	12.3.24	Root locus concept.	1
	12.3.24	Construction of root loci.	1
Chapter-6 Analysis of Stability by Root Locus Technique	15.3.24	Construction of root loci. Rules for construction of the root locus.	1
	14.3.24	Rules for construction of the root locus.	1
	15.3.24	Rules for construction of the root locus.	1
	18.3.24	Effect of adding poles and zeros to G(s) and H(s).	1
	19.3.24	Effect of adding poles and zeros to G(s) and H(s).	1
	19.3.24	Frequency Response Analysis.	1
	21.3.24	Correlation between time response and frequency response.	1
	22.3.24	Correlation between time response and frequency response.	1
Chapter-7 Frequency Response Analysis	28.3.24	Polar plots.	1
	2.4.24	Polar plots.	1
	2.4.24	Bode plots	1
	4.4.24	Bode plots	1
	5.4.24	Bode plots	1
	8.4.24	Bode plots	1
	9.4.24	All pass and minimum phase system.	1
	9.4.24	Computation of Gain margin and phase margin.	1
	12.4.24	Log magnitude versus phase plot.	1
	15.4.24	Closed loop frequency response	1
Chapter-8 Nyquist Plot	16.4.24	Nyquist Plot	1
	16.4.24	Nyquist Plot	1
	18.4.24	Principle of argument.	1
	19.4.24	Nyquist stability criterion.	1
	22.4.24	Nyquist stability criterion.	1
	23.4.24	Niquist stability criterion applied to inverse polar plot.	1

	23.4.24	Effect of addition of poles and zeros to G(S) H(S) on the shape of Niquist plot.	1
Chapter-8 Nyquist Plot	25.4.24	Assessment of relative stability.	1
	26.4.24	Previous year question discussion	1
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TOTAL NUMBER OF CLASSES			60

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