

DISCIPLINE ELECTRICAL	SEMESTER 6TH	NAME OF THE TEACHING FACULTY Binayak Satpathy (PTGF Electronics)
SUBJECT CONTROL SYSTEM ENGG	NO. OF DAYS/WEEK CLASS ALLOTTED - 75	SEMESTER FROM DATE 05.04.2021 to 30.06.2021 No. of week excluding holiday - 12
WEEK	CLASS DAY	THEORY TOPICS
1 ST	01	FUNDAMENTAL OF CONTROL SYSTEM - Classification of Control system
	02	Open loop system & Closed loop system and its comparison Effects of Feed back
	03	Standard test Signals(Step, Ramp, Parabolic, Impulse Functions)
	04	Servomechanism
	05	MATHEMATICAL MODEL OF A SYSTEM – Transfer Function & Impulse response
2 ND	06	Properties, Advantages & Disadvantages of Transfer Function Poles & Zeroes of transfer Function
	07	Simple problems of transfer function of network
	08	Mathematical modelling of Electrical Systems(R, L, C, Analogous systems)
	09	Revision of chapter - 2
	10	CONTROL SYSTEM COMPONENTS – Components of Control System Gyroscope
3 RD	11	Synchronous
	12	Tachometer
	13	DC servomotors, Ac Servomotors
	14	BLOCK DIAGRAM ALGEBRA & SIGNAL FLOW GRAPHS – Definition: Basic Elements of Block Diagram Canonical Form of Closed loop Systems
	15	Rules for Block diagram reduction
4 TH	16	Procedure for of Reduction of Block Diagram
	17	Simple Problem for equivalent transfer function
	18	Simple Problem for equivalent transfer function
	19	Basic Definition in Signal Flow Graph & properties Construction of Signal Flow graph from Block diagram
	20	Mason's Gain formula Simple problems in Signal flow graph for network
5 TH	21	Simple problems in Signal flow graph for network
	22	Revision & Solve problem of chapter - 4
	23	TIME RESPONSE ANALYSIS – Time response of control system
	24	Standard Test signal - 1. Step signal, 2. Ramp Signal 3. Parabolic Signal & 4. Impulse Signal
	25	Time Response of first order system with: 1. Unit step response & 2. Unit impulse response
6 TH	26	Time response of second order system to the unit step input Time response specification
	27	Derivation of expression for rise time, peak time, peak overshoot, settling time.
	28	Steady state error and error constants
	29	Types of control system.[Steady state errors in Type-0, Type-1, Type-2 system]
	30	Simple problems
	31	Effect of adding poles and zero to transfer function

7 TH	32	Response with P, PI, PD and PID controller
	33	Revision & Solve problem of chapter - 5
	34	Revision & Solve problem of chapter - 5
	35	ANALYSIS OF STABILITY BY ROOT LOCUS TECHNIQUE – Root locus concept.
8 TH	36	Construction of root loci
	37	Rules for construction of the root locus
	38	Rules for construction of the root locus
	39	Problem of root locus
	40	Problem of root locus
9 TH	41	Effect of adding poles and zeros to G(s) and H(s)
	42	Revision & Solve problem of chapter - 6
	43	Revision & Solve problem of chapter - 6
	44	FREQUENCY RESPONSE ANALYSIS – Correlation between time response and frequency response
	45	Polar plots.
10 TH	46	Problem of Polar plots.
	47	Bode plots.
	48	Problem of Bode plots.
	49	Problem of Bode plots.
	50	All pass and minimum phase system.
11 TH	51	Computation of Gain margin and phase margin.
	52	Log magnitude versus phase plot.
	53	Closed loop frequency response.
	54	Revision & Solve problem of chapter - 7
	55	Revision & Solve problem of chapter - 7
12 TH	56	NYQUIST PLOT - Principle of argument.
	57	Nyquist stability criterion. Niquist stability criterion applied to inverse polar plot.
	58	Problem of Nyquist plot.
	59	Effect of addition of poles and zeros to G(S) H(S) on the shape of Niquist plot.
	60	Assessment of relative stability. Constant M and N circle & Nicholas chart.