Department of Electrical Engineering

Branch: ETC Engineering	Semester: 6TH	Name of the Lecturer: **Snigdha Dash**
Subject: CSC	No of classes alloted in a week: 6	Duration of Semester: 04.02.02025 - 17.05.2025

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, Effects of Feed back
	3	Standard test Signals (Parabolic, Impulse, Parabolic, Impulse Functions)
	4	Servomechanism, Regulators (Regulating systems)
	5	**Transfer Functions-** Transfer Function of a system & Impulse response
	6	Properties, Advantages & Disadvantages of Transfer Function
2nd	1	Poles & Zeroes of transfer Function
	2	Representation of poles & Zero on the s-plane
	3	Simple problems of transfer function of network
	4	Simple problems of transfer function of network
	5	Simple problems of transfer function of network
	6	**Control system Components & mathematical modelling of physical System-** Components of Control System
3rd	1	Potentiometer, Synchros, Diode modulator & demodulator
	2	DC motors, AC Servomotors
	3	Modelling of Electrical Systems(R, L, C, Analogous systems)
	4	**Block Diagram & Signal Flow Graphs(SFG)-** Definition of Basic Elements of a Block Diagram, Canonical Form of Closed loop Systems
	5	Rules for Block diagram Reduction
	6	Procedure for of Reduction of Block Diagram
4th	1	Simple Problem for equivalent transfer function
	2	Basic Definition in SFG & properties, Mason's Gain formula
	3	Steps foe solving Signal flow Graph
	4	Simple problems in Signal flow graph for network
	5	**Time Domain Analysis of Control Systems-** Definition of Time, Stability, steady-state response, accuracy, transient accuracy, In-sensitivity and robustness
	6	System Time Response
5th	1	Analysis of Steady State Error
	2	Types of Input & Steady state Error(Step ,Ramp, Parabolic)
	3	Parameters of first order system & second-order systems
	4	Derivation of time response Specification (Delay time, Rise time, Peak time,Setting time,Peak over shoot)
	5	**FeedbackCharacteristics of Control Systems-** Effect of parameter variation in Open loop System & Closed loop Systems
	6	Introduction to Basic control Action & Basic modes of feedback control: proportional integral
6th	1	Introduction to Basic control Action & Basic modes of feedback control: proportional derivative
	2	Effect of feedback on overall gain, Stability
	3	Realisation of Controllers(P, PI,PD,PID) with OPAMP

6th	4	**Stability concept& Root locus Method-** Effect of location of poles on stability
	5	RouthHurwitz stability criterion
	6	Simple problem
7th	1	Steps for Root locus method
	2	Root locus method of design
	3	Simple problem
	4	Simple problem
	5	**Frequency-response analysis&Bode Plot-** Frequencyvresponse,Relationship between time & frequency response, Methods of Frequency response
	6	Polar plots & steps for polar plot
8th	1	Bodes plot & steps for Bode plots
	2	Stability in frequency domain, Gain Margin& Phase margin
	3	Nyquist plots. Nyquiststability criterion
	4	Simple problem
	5	**State variable Analysis-** Concepts of state, state variable
	6	Concepts of state mode
9th	1	State modelsfor linear continuous time functions(Simple)
	2	State modelsfor linear continuous time functions(Simple)
	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.