Lesson Plan

Subject:-**CSE**(Code) **TH-3** Name of faculty: -Bikram Keshari Parida

Semester: -**6th Summer 2025** Class allotted:- **4p/w** Branch :- **Electrical Engg.**

Discipline	Semester: -6th	From date:-04/02/25 To date:17/05/25	Teaching Aid
Subject:	No. of days/ per week 4p/w	Theory/ Practical –Topics/Lesson	
Week	Date/Period		

1	04/02/25 to 08/02/25	**1. FUNDAMENTALOFCONTROLSYSTEM** 1.1Classification of Control system 1.2 Open loop system &Closed loop system and its comparison 1.3 Effects of Feedback 1.4 Standard test Signals (Step, Ramp, Parabolic, Impulse Functions) 1.5 Servomechanism	White board & marker
2	10/02/25 to 15/02/25	**2.MATHEMATICAL MODEL OF A SYSTEM** 2.1 Transfer Function & Impulse response, 2.2 Properties, Advantages &Disadvantages of Transfer Function 2.3 Poles & Zeroes of transfer Function 2.4 Simple problems of transfer function of network. 2.5 Mathematical modeling of Electrical Systems(R,L,C, Analogous systems)	White board & marker
3	17/02/25 to 22/02/25	**3.CONTROL SYSTEM COMPONENTS** 3.1 Components of Control System 3.2 Gyroscope, Synchros, Tachometer, DC servomotors, Ac Servomotors.	White board & marker
4	24/02/25 to 01/03/25	**4.BLOCK DIAGRAM ALGEBRA & SIGNAL FLOW GRAPHS** 4.1 Definition: Basic Elements of BlockDiagram 4.2 Canonical Form of Closed loop Systems 4.3 Rules for Block diagram reduction 4.4 Procedure for of Reduction of Block Diagram	White board & marker
5	03/03/25 to 08/03/25	4.5 Simple Problem for equivalent transfer function 4.6 Basic Definition in Signal Flow Graph & properties 4.7 Construction of Signal Flow graph from Blockdiagram 4.8 Mason's Gain formula 4.9 Simple problems in Signal flow graph for network	White board & marker
6	10/03/25 to 13/03/25	**5. TIME RESPONSE ANALYSIS.** 5.1 Time response of control system. 5. 2 Standard Test signal. 5.2.1Step signal, 5.2.2 Ramp Signal 5.2.3 Parabolic Signal 5.2.4 Impulse Signal 5. 3Time Response of first order system with: 5.3.1Unit step response 5.3.2 Unit impulse response.	White board & marker

	17/03/25 to 21/03/25	5. 4 Time response of second order system to the unit step input. 5.4.1 Time response specification. 5.4.2 Derivation of expression for rise time,peak time, peak overshoot, settling time and steady state error. 5.4.3.Steady state error and error constants. 5 .5 Types of control system.[Steady state errors inType-0,Type-1,Type-2 system] 5.6 Effect of adding poles and zero to transfer function. 5 .7 Response with P, PI, PD and PID controller.	White board & marker
8	24/03/25 to 29/03/25	**6. ANALYSIS OF STABILITY BY ROOT LOCUS TECHNIQUE.** 6.1 Root locus concept. 6.2 Construction of root loci.	White board & marker
9	02/04/25 to 05/04/25	6.3 Rules for construction of the root locus. 6.4 Effect of adding poles and zeros to G(s) and H(s).	White board & marker
10	07/04/25 to 12/04/25	**7.FREQUENCY RESPONSE ANALYSIS.** 7.1Correlation between time response and frequency response. 7 .2 Polar plots. 7.3 Bode plots. 7.4 All pass and minimum phase system.	White board & marker
11	15/04/25 to 19/04/25	7.5 Computation of Gain margin and phase margin. 7 . 6 Log magnitude versus phase plot. 7.7Closedloopfrequency response.	White board & marker
12	21/04/25 to 26/04/25	**8. NYQUIST PLOT** 8.1 Principle of argument. 8.2 Nyquist stabilitycriterion. 8.3 Niquist stability criterion applied to inverse polar plot.	White board & marker & smart board
13	28/04/25 to 03/05/25	8.4 Effect of addition of poles and zeros to G(S) H(S)on the shape of Niquist plot. 8.5 Assessment of relative stability. 8.6 Constant M and N circle 8.7Nicholas chart.	White board & marker
14	05/05/25 to 10/05/25	Revision	White board & marker
15	13/05/25 to 17/05/25	Revision	White board & marker& smart board

Bikram Keshari Parida
Signature of faculty

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Signature of HOD