

<b>LESSON PLAN</b>	
<b>JHARSUGUDA ENGINEERING SCHOOL, JHARSUGUDA</b>	
Name of the Faculty: Rashmita Badhai	Academic Year: 2023-24
Course No: Th-2	Course Name: Control Systems and Components
Programme: Diploma	Branch: Electronics and Telecommunication Engineering
Year/ Semester: 3 <sup>rd</sup> /6 <sup>th</sup>	Theory Period: 4P/Week

Sl. No.	Period	Time (min)	Unit	Topic to be Covered	Teaching Method
1.	1	55	1	Classification of Control system	Chalk & Board
2.	2	55	1	Open loop system & Closed loop system and its comparison	Chalk & Board
3.	3	55	1	Effects of Feed back	Chalk & Board
4.	4	55	1	Standard test Signals (Step, Ramp, Parabolic, Impulse Functions)	Chalk & Board
5.	5	55	1	Servomechanism, Regulators (Regulating systems)	Chalk & Board
6.	6	55	2	Transfer Functions	Chalk & Board
7.	7	55	2	Transfer Function of a system & Impulse response	Chalk & Board
8.	8	55	2	Properties, Advantages & Disadvantages of Transfer Function	Chalk & Board
9.	9	55	2	Poles & Zeroes of transfer Function	Chalk & Board
10.	10	55	2	Representation of poles & Zero on the s-plane	Chalk & Board
11.	11	55	2	Representation of poles & Zero on the s-plane	Chalk & Board
12.	12	55	2	Simple problems of transfer function of network	Chalk & Board
13.	13	55	2	Simple problems of transfer function of network	Chalk & Board
14.	14	55	3	Components of Control System	Chalk & Board
15.	15	55	3	Potentiometer, Synchro	Chalk & Board
16.	16	55	3	Diode modulator & demodulator	Chalk & Board
17.	17	55	3	DC motors, AC Servomotors	Chalk & Board
18.	18	55	3	Modelling of Electrical Systems (R, L, C, Analogous systems)	Chalk & Board
19.	19	55	4	Definition of Basic Elements of a Block Diagram	Chalk & Board
20.	20	55	4	Canonical Form of Closed loop Systems	Chalk & Board
21.	21	55	4	Rules for Block diagram Reduction	Chalk & Board
22.	22	55	4	Procedure for of Reduction of Block Diagram	Chalk & Board
23.	23	55	4	Simple Problem for equivalent transfer function	Chalk & Board
24.	24	55	4	Basic Definition in SFG & properties	Chalk & Board
25.	25	55	4	Mason's Gain formula, Steps foe solving Signal flow Graph	Chalk & Board
26.	26	55	4	Simple problems in Signal flow graph for network	Chalk & Board
27.	27	55	5	Definition of Time, Stability, steady-state response,	Chalk & Board
28.	28	55	5	accuracy, transient accuracy, In-sensitivity and robustness	Chalk & Board

29.	29	55	5	System Time Response	Chalk & Board
30.	30	55	5	Analysis of Steady State Error	Chalk & Board
31.	31	55	5	Types of Input & Steady state Error (Step, Ramp, Parabolic)	Chalk & Board
32.	32	55	5	Parameters of first order system & second-order systems	Chalk & Board
33.	33	55	5	Derivation of time response (Delay time, Rise time, Peak time)	Chalk & Board
34.	34	55	5	Derivation of time response (Setting time, Peak over shoot)	Chalk & Board
35.	35	55	6	Effect of parameter variation in Open loop System & Closed loop Systems	Chalk & Board
36.	36	55	6	Introduction to Basic control Action	Chalk & Board
37.	37	55	6	Basic modes of feedback control	Chalk & Board
38.	38	55	6	proportional, integral and derivative	Chalk & Board
39.	39	55	6	Effect of feedback on overall gain, Stability	Chalk & Board
40.	40	55	6	Realisation of Controllers (P, PI, PD, PID) with OPAMP	Chalk & Board
41.	41	55	7	Effect of location of poles on stability	Chalk & Board
42.	42	55	7	Routh Hurwitz stability criterion	Chalk & Board
43.	43	55	7	Problems on Routh Hurwitz stability criterion	Chalk & Board
44.	44	55	7	Steps for Root locus method	Chalk & Board
45.	45	55	7	Problems on Steps for Root locus method	Chalk & Board
46.	46	55	7	Root locus method of design	Chalk & Board
47.	47	55	7	Root locus method of design	Chalk & Board
48.	48	55	7	Problems on Root locus method of design	Chalk & Board
49.	49	55	8	Frequency response, Relationship between time & frequency response	Chalk & Board
50.	50	55	8	Methods of Frequency response	Chalk & Board
51.	51	55	8	Polar plots & steps for polar plot	Chalk & Board
52.	52	55	8	Bodes plot & steps for Bode plots	Chalk & Board
53.	53	55	8	Stability in frequency domain, Gain Margin & Phase margin	Chalk & Board
54.	54	55	8	Nyquist plots. Nyquist stability criterion	Chalk & Board
55.	55	55	8	Simple problems as above	Chalk & Board
56.	56	55	9	State variable Analysis	Chalk & Board
57.	57	55	9	Concepts of state	Chalk & Board
58.	58	55	9	state variable	Chalk & Board
59.	59	55	9	state model	Chalk & Board
60.	60	55	9	state models for linear continuous time functions (Simple)	Chalk & Board