LESSON PLAN

Name of the Institute:	C. V. RAMAN POLYTECHNIC
Department:	ELECTRICAL ENGINEERING
Semester/Division/Branch:	6TH SEM/EE
Subject Name with code:	CONTROL SYSTEM(TH-3)
Total No. of Class (Required):	60
Faculty Name:	SUBHANKAR DASH

Class No.	Brief description of the Topic/Chapter to be taught	Remarks
1	Classification of Control system	
2	Open loop system & Closed loop system and its comparison	
3	Effects of Feed back	
4	Standard test Signals(Step, Ramp, Parabolic, Impulse Functions),Servomechanism	
5	Transfer Function & Impulse response,	
6	Properties, Advantages & Disadvantages of Transfer Function	
7	Poles & Zeroes of transfer Function	
8	Simple problems of transfer function of network,Mathematical modeling of Electrical Systems(R, L, C, Analogous systems)	
9	Components of Control System	
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11	Gyroscope, Synchros, Tachometer, DC servomotors, Ac Servomotors.	
12	Gyroscope, Synchros, Tachometer, DC servomotors, Ac Servomotors.	
13	Definition: Basic Elements of Block Diagram	
14	Canonical Form of Closed loop Systems	
15	Rules for Block diagram reduction	
16	Procedure for of Reduction of Block Diagram	
17	Simple Problem for equivalent transfer function	

18	Basic Definition in Signal Flow Graph & properties	
19	Construction of Signal Flow graph from Block diagram	
20	Mason's Gain formula,Simple problems in Signal flow graph for network.	
21	Time response of control system.	
22	Step signal, Ramp Signal,Parabolic Signal,Impulse Signal	
23	Time Response of first order system system with: Unit step response, Unit impulse response.	
24	Time response of second order system to the unit step input,Time response specification.	
25	Derivation of expression for rise time, peak time, peak overshoot, settling time and steady state error.	
26	Derivation of expression for rise time, peak time, peak overshoot, settling time and steady state error.	
27	Steady state error and error constants.	
28	Types of control system.[Steady state errors in Type-0, Type-1, Type-2 system]	
29	Effect of adding poles and zero to transfer function.	
30	Response with P, PI, PD and PID controller.	
31	Root locus concept.	
32	Root locus concept.	
33	Construction of root loci.	
34	Construction of root loci.	
35	Construction of root loci.	
36	Rules for construction of the root locus.	
37	Rules for construction of the root locus.	
38	Rules for construction of the root locus.	
39	Effect of adding poles and zeros to G(s) and H(s).	
40	Effect of adding poles and zeros to G(s) and H(s).	
41	Correlation between time response and frequency response.	

42	Polar plots.	
43	Bode plots.	
44	All pass and minimum phase system.	
45	Computation of Gain margin and phase margin.	
46	Log magnitude versus phase plot.	
47	Log magnitude versus phase plot.	
48	Closed loop frequency response.	
49	Closed loop frequency response.	
50	Closed loop frequency response.	
51	Principle of argument.	
52	Nyquist stability criterion.	
53	Niquist stability criterion applied to inverse polar plot.	
54	Effect of addition of poles and zeros to G(S) H(S) on the shape of Niquist plot.	
55	Effect of addition of poles and zeros to G(S) H(S) on the shape of Niquist plot.	
56	Assessment of relative stability.	
57	Constant M and N circle	
58	Constant M and N circle	
59	Nicholas chart.	
60	Nicholas chart.	

Signature of the Faculty   **Signature of the H.O.D**