

Lesson Plan
Subject: Control System Engineering Semester:
6th
Diploma in Electrical Engineering

Sl.No.	Topics to be covered	No. of hours Required	Module	Mode of Teaching
1	Fundamentals of Control system with its Classification of Control system.	01	I	LM/IM
2	Details on Open loop system & Closed loop system and its comparison.	01	I	LM/IM
3	Explain about Effects of Feedback.	01	I	LM/IM
4	Solve numerical on the above topics.	01	I	LM/IM/ICT
5	Standard test Signals (Step, Ramp).	01	I	LM/IM
6	Standard test Signals (Parabolic, Impulse Functions).	01	I	LM/IM
7	Explain about the Servo mechanism.	01	I	LM/IM
8	Transfer Function & Impulse response.	01	II	LM/IM
9	Properties, Advantages & Disadvantages of Transfer Function	01	II	LM/IM
10	Solve numerical on the Poles & Zeros of transfer Function.	01	II	LM/IM
11	Components of Control System.	01	II	LM/IM
12	Gyroscope, Synchros, Tachometer, DC servomotors, Ac Servomotors.	01	II	LM/IM
13	Discussion on the Components of Control System	01	III	LM/IM
14	Discussion on the Gyroscope.	01	III	LM/IM
15	Discussion on the Synchros, Tachometer and its working.	01	III	LM/IM
16	Discussion on the DC servomotors, Ac Servomotors.	01	III	LM/IM
17	Components of Control System	01	III	LM/IM/ICT
18	Definition: Basic Elements of Block Diagram	01	IV	LM/IM
19	Canonical Form of Closed loop Systems	01	IV	LM/IM
20	Rules for Block diagram reduction	01	IV	LM/IM
21	Construction of Signal Flow graph from Block diagram	01	IV	LM/IM
22	Derivation of Mason's Gain formula and solve numerical.	01	IV	LM/IM
23	Simple problems in Signal flow graph for network	01	IV	LM/IM
24	Discussion on Time response of control system.	01	V	LM/IM
25	Discussion on Standard Test signal.	01	V	LM/IM

26	DiscussiononStepsignal.	01	V	LM/IM
27	DiscussiononRampSignal.	01	V	LM/IM
28	DiscussiononParabolicSignalandImpulseSignal.	01	V	LM/IM
29	Solvenumericalontheabovetopics.	01	V	LM/IM
30	DiscussiononTimeResponseoffirstordersystem.	01	V	LM/IM
31	DiscussiononUnitstepresponse.	01	V	LM/IM
32	DiscussiononUnitimpulseresponse.	01	V	LM/IM
33	Timeresponseofsecondordersystemtotheunitstepinput.	01	V	LM/IM
34	DerivationofTimeresponsespecification.	01	V	LM/IM/ICT
35	Derivationofexpressionforrisetime,peakttime,peakovershoot, settlingtimeandsteady	01	V	LM/IM
36	Solvenumericalontheabovetopics.	01	V	LM/IM
37	Steadystateerroranderrorconstants.	01	V	LM/IM
38	Rootlocusconcept.	01	VI	LM/IM
39	Constructionofroot loci.	01	VI	LM/IM
40	Rulesfor constructionoftheroot locus.	01	VI	LM/IM
41	BasicsaboutEffectofaddingpolesandzerostoG(s)andH(s).	01	VI	LM/IM
42	SolvenumericalontheRootlocusconcept.	01	VI	LM/IM
43	DetailsderivationabouttheConstructionofroot loci.	01	VI	LM/IM
44	Solvenumericalontheabovetopicsofrootlocus.	01	VI	LM/IM
45	DiscussiononEffectofaddingpolesandzerostoG(s)andH(s).	01	VI	LM/IM
46	Discussiononcorrelationbetweentimeresponseandfrequency response.	01	VII	LM/IM
47	DiscussionaboutthePolarplotswithsolvenumericalonit.	01	VII	LM/IM
48	DiscussionabouttheBodeplotswithsolvenumericalon it.	01	VII	LM/IM
49	Allpassandminimum phasesystem.	01	VII	LM/IM
50	ComputationofGainmarginandphasemargin.	01	VII	LM/IM
51	Logmagnitudeversusphaseplot.	01	VII	LM/IM
52	SolvenumericalonClosedloopfrequencyresponse.	01	VII	LM/IM
53	Solvenumericalforallpassandminimumphasesystem.	01	VII	LM/IM
54	DerivationofComputationofGainmarginandphasemargin.	01	VII	LM/IM
55	Intrdcuctiononassessmentofrelativestability.	01	VIII	LM/IM
56	Nyquiststabilitycriterion.	01	VIII	LM/IM

57	Niquiststabilitycriterionappliedtoinversepolar plot.	01	VIII	LM/IM/
58	EffectofadditionofpolesandzerostoG(S)H(S)ontheshape of Nyquistplot.	01	VIII	LM/IM
59	ConstantM-circle,ConstantN-circle	01	VIII	LM/IM
60	DetailsontheNicholaschart	01	VIII	LM/IM