GIET, POLYTECHNIC, JAGATPUR, CUTTACK

LESSON PLAN

Discipline: Electrical.	Semester:6th	Nameofthe TeachingFaculty:-Rupak kumarsahoo
Subject:control system engg.- (TH-3)	No. Of Days Per Week Class Allotted: 05P Lecture:05	Semester From Date: 2.01.24 To Date: 26.04.24 No.ofweeks:15
Week	**Class Day**	**Theory topic**
1st	1st	Unit-1:FUNDAMENTAL OF CONTROL SYSTEM 1.1:Classification of control system
	2nd	1.2:Open loop system 1.2:Closed loop system & its comparision
	3rd	1.3:Effect of feedback
	4th	1.4:Standard test signal(step,ramp,parabolic,impulse function)
	5th	1.5:Servomechanism 1.6:Regulator(regulatingsystems)
2nd	1st	Unit-2:TRANSFER FUNCTIONS 2.1:Transfer function of a system &impulse response
	2nd	2.2:Properties of transfer function & it's advantage and disadvantages
	3rd	2.3:Poles&Zeros of transfer function
	4th	2.4:Representation of poles &zeros in s-plane
	5th	2.5: Simple problem on Transfer function of network
3rd	1st	Unit-3:CONTROL SYSTEM COMPONENTS&MATHEMATICAL MODELLING OF PHYSICAL SYSTEM 3.1:Components of control system
	2nd	3.2:Potentiometer&its transferfunction
	3rd	3,2:Synchro& its transferfunction
	4th	3.2:Diode modulator& demodulator
	5th	3.3:D.C. motor & its transferfunction
4th	1st	3.4:Modelling of electrical system(R-L-C analogous system)
	2nd	3.4 :Problem related modeling
	3rd	3.4 :Problem related modeling
	4th	3.4 :Problem related modeling
	5th	3.4 :Problem related modeling
5th	1st	Unit-4:BLOCK DIAGRAM & SIGNAL FLOW GRAPH 4.1:Defination of basic elements of block diagram
	2nd	4.2:Chemical form of closed loop system
	3rd	4.3:Rules of block diagram reduction
	4th	4.4:Procedure for Block diagram reduction
	5th	4.5:Simple problem for transfer function
6th	1st	4.5:Simple problem for transfer function
	2nd	4.5:Simple problem for transfer function
	3rd	4.5:Simple problem for transfer function
	4th	4.6:Basic definition in Signal flow graph

7th	2nd	4.8:Steps for solving SFG
	3rd	4.9:Simple problem in SFG
	4th	4.9:Simple problem in SFG
	5th	4.9:Simple problem in SFG
8th	1st	Unit-5:TIME DOMAIN ANALYSIS OF CONTROL SYSTEM 5.1:Defination of time stability
	2nd	5.1:Defination of steady state response
	3rd	5.1:Defination of accuracy, transient accuracy,insensitivity&robustness
	4th	5.2:Sytem time response
	5th	5.3:Analysis of steady state error
9th	1st	5.4:Types of input
	2nd	5.4:Steady state error
	3rd	5.5:Parameters of first order system & second order system
	4th	5.6:Derivation of time response specification(delay time,rise time)
	5th	5.6:Derivation of time response specification(peaktime,settingtime,peak overshoot)
10th	1st	Unit-6:FEEDBACK CHARACTERSTIC OF CONTROL SYSTEM 6.1:Effect of parameter variation in open loop system
	2nd	6.1:Effect of parameter variation in closed loop system
	3rd	6.2:Introduction to basic control action& basic modes of feedbackcontrol(P.PI,PID CONTROLLER)
	4th	6.3Effect of feedback on overall gain ,stability
	5th	6,4:Realisation of controller (P,PI with opamp)
11th	1st	6,4:Realisation of controller (PD,PIDwithopamp)
	2nd	UNIT-7:STABILITY CONCEPY AND ROOT LOCUS METHOD 7.1:Effect of location of poles on stability
	3rd	7.1:Effect of location of Zeros on stability
	4th	7.2:Routh Hurwitz stability criterion
	5th	7.2:Routh Hurwitz stability criterion and related problem
12th	1st	7.3:Steps for rootlocus method
	2nd	7.4:Root locus method design
	3rd	7.4:Root locus method design& simple problems
	4th	7.4:Root locus method design& simple problems
	5th	7.4:Root locus method design& simple problems
13th	1st	UNIT-8:FREQUENCY RESPONSE ANALYSIS AND BODE PLOT 8.1:Frequency response, relationship between time and frequency response
	2nd	8.2:Method of frequency response
	3rd	8.3:polar plots
	4th	8.4:BODEPLOTS&its steps
	5th	8.5:Stability in frequency domain ,gain margin ,phase margin
	1st	8.6:Nquist criterion &nquist plot
	2nd	8.6:Nquist criterion &nquist plot and steps and procedure

14th	3rd	8.6:Nquist criterion &nquist plot and simple problems
	4th	8.6:Nquist criterion &nquist plot& simple problems
	5th	8.6:Nquist criterion &nquist plot & simple problems
15TH	I ST	Unit-9:STATE VARIABLE ANALYSIS 9.1:Concept of state,statevariable,state model
	2ND	9.1:Concept of state,statevariable,state model
	3RD	9.2:Steps model for linear continuous time function (simple)
	4TH	9.2:Steps model for linear continuous time function (simple)
	5TH	REVISION

Signature of Lecturer 2/01/24

Signature of H.O.D 2/01/24

Head of Dept. (HOD)
Electrical & ETC F...
G.P.E.T (POLY)...

Signature of Principal 2/01/24