PSIET,KARANDA,DHENKANAL

LESSONPLAN

Session(2022-2023)

Discipline: Electrical Engg.	**Semester:6th, Summer/2023**	**Name of the Faculty:** Nabin Kumar Pradhan, Lecturer
Subject: ControlSystems Engineering Theory-3	**No.ofDays/week:**05	**StartDate:15/02/2023** **End Date: 23/05/2023**

Week	ClassDay	TheoryTopics
1st	1st	ClassificationofControlsystem.
	2nd	Openloopsystem&Closedloopsystemanditscomparison.
	3rd	EffectsofFeedback.
	4th	StandardtestSignals(Step,Ramp,Parabolic,andImpulseFunctions).
	5th	StandardtestSignals(Step,Ramp,Parabolic,andImpulseFunctions).
2nd	1st	Servomechanism.
	2nd	Regulators(Regulatingsystems)
	3rd	**RevisionandDoubtclearing.**
	4th	TransferFunctionofasystem.
	5th	TransferFunctionofasystem.
3rd	1st	Impulseresponseofasystem.
	2nd	Properties,Advantages&DisadvantagesofTransferFunction.
	3dr	Poles&ZeroesoftransferFunction.
	4th	Representationofpoles&Zeroonthes-plane.
	5th	Representationofpoles&Zeroonthes-plane.
4th	1st	Simpleproblemsoftransferfunctionofnetwork.
	2nd	**DoubtclearingandClasstest.**

	3dr	Closelooptransferfunction.
	4th	Conceptofcharacteristicsequation
	5th	Conceptofcharacteristicsequation
5th	1st	BlockDiagramreductiontechnique.
	2nd	BlockDiagramreductiontechnique.
	3rd	Stabilityofsystem.
	4th	Blockdiagramreductionproblem.
	5th	BlockDiagramreductiontechnique
6th	1st	ModelingofElectricalSystems(R,L,C,Analogoussystems).
	2nd	**RevisionandDoubtclearing.**
	3rd	DefinitionofBasicElementsofaBlockDiagram.
	4th	CanonicalFormofClosedloopSystems.
	5th	CanonicalFormofClosedloopSystems.
7th	1st	RulesforBlockdiagramReductionpart-I
	2nd	RulesforBlockdiagramReductionpart-II
	3rd	ProcedureforofReductionofBlockDiagram.
	4th	SimpleProblemforequivalenttransferfunction.
	5th	SimpleProblemforequivalenttransferfunction.
8th	1st	BasicDefinitioninSFG&properties.
	2nd	Mason'sGainformula.
	3rd	StepsforsolvingSignalflowGraph.
	4th	SimpleproblemsinSignalflowgraphfornetwork.
	5th	SimpleproblemsinSignalflowgraphfornetwork.
9th	1st	**DoubtclearingandClasstest.**
	2nd	DefinitionofTime,Stability,steady-stateresponse,accuracy,transient accuracy, In-sensitivity and robustness.
	3rd	SystemTimeResponse.
	4th	Frequencyresponseanalysis.
	5th	AnalysisofSteadyStateError.

10th	1st	TypesofInput&SteadystateError(Step,Ramp,Parabolic).
	2nd	Parametersoffirstordersystem&second-ordersystems.
	3rd	DerivationoftimeresponseSpecification(Delaytime,Risetime,Peak
		time,Settingtime,Peakovershoot).
	4th	**RevisionandDoubtclearing.**
	5th	**RevisionandDoubtclearing.**
11th	1st	EffectofparametervariationinOpenloopSystem&Closedloop Systems.
	2nd	IntroductiontoBasiccontrolAction&Basicmodesoffeedbackcontrol: proportional, integral and derivative.
	3rd	Effectoffeedbackonoverallgain,Stability.
	4th	RealizationofControllers(P,PI,PD,PID)withOPAMP.
	5th	RealizationofControllers(P,PI,PD,PID)withOPAMP
12th	1st	**RevisionandDoubtclearing.**
	2nd	Effectoflocationofpolesonstability.
	3rd	Routh-Hurwitzstabilitycriterion.
	4th	StepsforRootlocusmethod.
	5th	StepsforRootlocusmethod.
13th	1st	Rootlocusmethodofdesign(Simpleproblem).
	2nd	**RevisionandDoubtclearing.**
	3rd	Frequencyresponse,Relationshipbetweentime&frequencyresponse.
	4th	MethodsofFrequencyresponse.
	5th	MethodsofFrequencyresponse.
14th	1st	Polarplots&stepsforpolarplot.
	2nd	Bodesplot&stepsforBode plots.
	3rd	Stabilityinfrequencydomain,GainMargin&Phasemargin.
	4th	Nyquistplots.Nyquiststabilitycriterion.
	5th	Nyquistplots.Nyquiststabilitycriterion.
15th	1st	Simpleproblemsasabove.
	2nd	Conceptsofstate,statevariable,statemodel.

	3rd	Statemodelsforlinearcontinuoustimefunctions(Simple).
	4th	DoubtclearingandClasstest.
	5th	DoubtclearingandClasstest.

Nabin Kr. Baruah.

Signature of the faculty

Signature of the Principal