Discipline: ElectricalEngg.	Semester: 3rd	NameoftheTeachingFaculty: Mousumi Jena
Subject: Engg.Math-III	No ofDays/perweek classallotted: 4P	Semester From Date:01/08/2023 To:- 30/11/2023 No.ofWeeks:15
Week	ClassDay	TheoryTopics
1ST	1st	1.COMPLEXNUMBER Arrival of complex number. Introduction of i (iota) and its properties. Representation ofcomplexnumber.Conjugateof acomplex numberand itsproperties.
	2nd	Modulus,Amplitudeof acomplexnumberand itsproperties.Representation ofaComplex Number.
	3rd	Cuberootsof Unityand its properties
	4th	SquarerootsofacomplexNumber
2ND	1st	DeMoivre'sTheoremanditsapplication
	2nd	SolveproblemsonTBE(TextBookExercise)

	3rd	**2.MATRICES** Definerankofamatrixwithexamples.
	4th	Performelementaryrowtransformationstodeterminetherankofamatrix.
3RD	1st	StateRouche'stheoremforconsistencyofasystemoflinearequationsinunknowns.
	2nd	Solveequationsinthreeunknownstestingconsistency.
	3rd	**3.LINEAR DIFFERENTIALEQUATIONS** Define Homogeneous & Non-Homogeneous linear Differential Equations with constantcoefficients with example. General Solution of LDE in terms of C.F and P.I. Rules for FindingtheComplementaryFunction (y_c). Case-I(RootsofA.E.arerealanddistinct)
	4th	Case-II(Roots of A.E. are real and repeated)Case-III(RootsofA.E.areimaginary) Case-IV(Combinedcaseof all theabove3cases)
4TH	1st	Rules Forfinding Particularintegral(y_p)orCompleteSolution(y_c+y_p). $F(D)y=f(x)\Rightarrow y_p=\frac{f(x)}{F(D)}$. Case-I($f(x)=x^n$form) Case-II ($f(x)=e^{ax}$, such that $F(a)\neq 0$.)Case-III($f(x)=e^{ax}$,suchthat$F(a)=0$)
	2nd	Case-IV($f(x)=\sin(ax+b)$orcos$(ax+b)$suchthat$F(-a^2)\neq 0$) Case-V($f(x)=\sin(ax+b)$orcos$(ax+b)$suchthat$F(-a^2)=0$)
	3rd	Case-VI($f(x)=e^{ax}V$,Visfunctionofx) Case-VII($f(x)=xV$)

	4th	SolveproblemsonTBE(TextBookExercise)
5TH	1st	PartialDifferentialEquation(PDE):OrderanddegreeofPDE.FormationofaPDE
	2nd	FormationofPDE
	3rd	SolveLinearEquationoffirstorder:Pp+Qq=R
	4th	SolveproblemsonTBE(TextBookExercise)
6TH	1st	**4.LAPLACE TRANSFORMS** Definition:GammaFunction,PropertiesofGammaFunctionwithexamples
	2nd	DefinitionofLaplaceTransformof$f(t)$.LinearProperty. EvaluationofLaplaceTransformationofsomestandard/ElementaryFunctions($f(t)=k$or t^nore^{at}ore^{-at}orsinhatorcoshatorsinatorcosat)
	3rd	SimpleUseLaplacetransformofStandardformula.
	4th	ShiftingTheorems/Property ChangeofScaleProperty
7TH	1st	ApplicationofUsingShiftingProperty
	2nd	Transformof$e^{at}f(t)$,$t^n f(t)$,$\frac{1}{t}f(t)$withExample
	3rd	FormulateLaplace transform ofDerivatives,integrals,multiplication byt^nanddivision by$t$ withexample
	4th	-DO-
8TH	1st	Define:InverseLaplaceTransform(ILT). Formulaforstandardfunction
	2nd	ILTbymethodofpartialfraction
	3rd	-Do-
	4th	SolveproblemsonTBE(TextBookExercise)

9TH	1st	**5.FOURIERSERIES** DefinePeriodicFunctionswithgraphs.Even/OddFunctions.DirichletFunction
	2nd	DefineFourierSeriesanditsnotations.EulerformulaforFourierSeries
	3rd	WorkoutExamples
	4th	DirichletConditionfortheexpansionofFourierseriesanditsconvergent
10TH	1st	ProblemSolvingonpreviousclass
	2nd	ProblemSolvingonpreviousclass
	3rd	ProblemSolvingonpreviousclass
	4th	FourierSeriesofEven/Odd functions in$(0\leq x\leq 2\pi and -\pi\leq x\leq \pi)$
11TH	1st	ProblemPracticeofpreviousclass
	2nd	FourierSeriesofContinuousfunctionsandfunctionshavingpointofdiscontinuousin $(0\leq x\leq 2\pi and -\pi\leq x\leq \pi)$
	3rd	ProblemPracticeof previousclass
	4th	SolveproblemsonTBE(TextBookExercise)andpreviousyearquestions
12TH	1st	**6.NUMERICAL METHODS** LimitationofanalyticalmethodsofsolutionofAlgebraicEquation.
	2nd	DeriveiterativeformulaforfindingthesolutionsofAlgebraicEquationby I-BisectionMethod
	3rd	II-Newton-RaphsonMethod
	4th	SolveproblemsonTBE(TextBookExercise)
13TH	1st	**7.FINITEDIFFERENCE&INTERPOLATION** FormationofForward(Δ)andBackward(∇)Differencetable.

	2nd	Define:Shiftoperator(E).Relationamongtheoperators
	3rd	Newton'sforwardandbackwardinterpolationforequalinterval
	4th	ProblemSolvingonpreviousclass
14TH	1st	ProblemSolvingonpreviousclass
	2nd	LagrangeInterpolationformulaforunequalintervals
	3rd	ProblemSolvingonpreviousclass
	4th	ExplainNumericalIntegration.1.Newton'sCote'sformula
15TH	1st	ProblemSolvingonpreviousclass
	2nd	2.TrapezoidalRule.Solvingproblems
	3rd	3.Simpson's1/3rdrule.SolvingProblems.
	4th	ProblemSolvingonpreviousclass

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Discipline:- Electrical Engineering	Semester:- 3rd	Name of the teaching faculty:-SANDEEP KUMAR PANIGRAHI
Subject:- Circuit and Network Theory	No. of days/ per week class allotted:-5	Semester from:- 01/08/ 2023 To:- 30/11/2023
Week	Class day	Theory
1st	1st	1. **MAGNETIC CIRCUITS** 1 . 1 Introduction
	2nd	1 . 2 Magnetizing force, Intensity, MMF, flux and their relations
2nd	1st	1 . 3 Permeability, reluctance and permeance
	2nd	1 . 4 Analogy between electric and Magnetic Circuits
	3rd	1 . 5 B-H Curve
	4th	1 . 6 Series & parallel magnetic circuit.
3rd	1st	1 . 7 Hysteresis loop
	2nd	2. **COUPLED CIRCUITS:** 2 . 1 Self Inductance and Mutual Inductance
	3rd	2 . 2 Conductively coupled circuit and mutual impedance 2 . 3 Dot convention
4th	1st	2 . 4 Coefficient of coupling
	2nd	2 . 5 Series and parallel connection of coupled inductors.
	3rd	2 . 6 Solve numerical problems

	4th	**CIRCUIT ELEMENTS AND ANALYSIS:** 3 . 1 Active, Passive, Unilateral & bilateral, Linear &Non linear elements
	5th	3 . 2 Mesh Analysis, Mesh Equations by inspection 3 . 3 Super mesh Analysis
5th	1st	3 . 4 Nodal Analysis, Nodal Equations by inspection
	2nd	3 . 5 Super node Analysis.
	3rd	3 . 6 Source Transformation Technique
	4th	3 . 7 Solve numerical problems (With Independent Sources Only)
6th	1st	4. **NETWORK THEOREMS:** 4.1 Star to delta and delta to star transformation
	2nd	4.2 Super position Theorem
	3rd	4.2 Super position Theorem
	4th	4.3 Thevenin's Theorem
	5th	4.3 Thevenin's Theorem
7th	1st	4.4 Norton's Theorem
	2nd	4.5 Maximum power Transfer Theorem.
	3rd	4.6 Solve numerical problems (With Independent Sources Only)
	4th	5. **AC CIRCUIT AND RESONANCE:** 5.1 A.C. through R-L, R-C & R-L-C Circuit

8th	1st	5.2 Solution of problems of A.C. through R-L, R-C & R-L-C series Circuit by complex algebra method.
	2nd	5.3 Solution of problems of A.C. through R-L, R-C & R-L-C parallel & Composite Circuits
	3rd	5.4 Power factor & power triangle.
	4th	5.5 Deduce expression for active, reactive, apparent power.
	5th	5.6 Derive the resonant frequency of series resonance and parallel resonance circuit
9th	1st	5.7 Define Bandwidth, Selectivity & Q-factor in series circuit.
	2nd	5.8 Solve numerical problems
	3rd	6. **POLYPHASE CIRCUIT** 6.1 Concept of poly-phase system and phase sequence
	4th	6.2 Relation between phase and line quantities in star & delta connection
	5th	6.3 Power equation in 3-phase balanced circuit.
10th	1st	6.4 Solve numerical problems
	2nd	6.5 Measurement of 3-phase power by two wattmeter method.
	3rd	6.6 Solve numerical problems.
	4t	**TRANSIENTS:** 7.1 Steady state & transient state response.
	5th	7.1 Steady state & transient state response.

11th	1st	7.2 Response to R-L, R-C & RLC circuit under DC condition.
	2nd	7.2 Response to R-L, R-C & RLC circuit under DC condition.
	3rd	7.3 Solve numerical problems
	4th	7.3 Solve numerical problems
12th	1st	8. **TWO-PORT NETWORK:** 8.1 Open circuit impedance (z) parameters
	2nd	8.2 Short circuit admittance (y) parameters
	3rd	8.3 Transmission (ABCD) parameters
	4th	8.4 Hybrid (h) parameters.
	5th	8.5 Inter relationships of different parameters.
13th	1st	8.5 Inter relationships of different parameters.
	2nd	8.6 T and π representation.
	3rd	8.7 Solve numerical problems
	4th	9. **FILTERS:** 9.1 Define filter
	5th	9.2 Classification of pass Band, stop Band and cut-off frequency.
14th	1st	9.3 Classification of filters.
	2nd	9.4 Constant – K low pass filter. 9.5 Constant – K high pass filter

15th	3rd	9.6 Constant – K Band pass filter. 9.7 Constant – K Band elimination filter.
	4th	9.8 Solve Numerical problems

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Discipline:**ELECTRICAL ENGINEERING**	Semester :**3rd**	Name of the Teaching Faculty:**Prabhat Rashmi Mallik**
Subject: **ELECTRICAL ENGINEERING MATERIALS**	No. of days/per week class allotted:**04**	Semester From date : **01/08/ 2023** To:- **30/11/2023**
Week	**Class Day**	**Theory Topics**
1ST	1ST	Conducting Materials: Introduction ,Resistivity,
	2ND	Factors affecting resistivity , Classification of conducting materials into low-resistivity and high resistivity materials
	3RD	Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)
	4TH	Stranded conductors, Bundled conductors
2ND	1ST	Low resistivity copper alloys High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)
	2ND	Superconductivity , Superconducting materials
	3RD	Application of superconductor materials
	4TH	Semiconducting Materials: Introduction , Semiconductors
3RD	1ST	Electron Energy and Energy Band Theory
	2ND	Excitation of Atoms ,Insulators, Semiconductors and Conductors
	3RD	Semiconductor Materials
	4TH	Covalent Bonds ,Intrinsic Semiconductors
4TH	1ST	Extrinsic Semiconductors
	2ND	N-Type Materials , P-Type Mateials
	3RD	Minority and Majority Carriers
	4TH	Semi-Conductor Materials ,Applications of Semiconductor materials
5TH	1ST	Rectifiers ,Temperature-sensitive resisters or thermistors ,Photoconductive cells
	2ND	Photovoltaic cells
	3RD	Varisters Transistors
	4TH	Hall effect generators , Solar power
6TH	1ST	Insulating Materials: Introduction ,General properties of Insulating Materials
	2ND	Electrical properties
	3RD	Visual properties ,Mechanical properties
	4TH	Thermal properties ,Chemical properties , Ageing
7TH	1ST	Thermal properties ,Chemical properties ,Ageing
	2ND	Introduction,Classification of insulating materials on the basis physical and chemical structure

	3RD	Insulating Gases ,Introduction,Commonly used insulating gases chemical structure
	4TH	Dielectric Materials: Introduction ,Dielectric Constant of Permittivity
8TH	1ST	Polarization
	2ND	Dielectric Loss
	3RD	Electric Conductivity of Dielectrics and their Break Down
	4TH	Properties of Dielectrics.
9TH	1ST	Applications of Dielectrics.
	2ND	Magnetic Materials: 5.1 Introduction 5.2 Classification
	3RD	Diamagnetism
	4TH	Para magnetism
10TH	1ST	Ferromagnetism
	2ND	Magnetization Curve
	3RD	Hysteresis
	4TH	Eddy Currents
11TH	1ST	Curie Point
	2ND	Magneto-striction
	3RD	Soft and Hard magnetic Materials
	4TH	Soft magnetic materials
12TH	1ST	Hard magnetic materials
	2ND	Materials for Special Purposes 6.1 Introduction
	3RD	Structural Materials
	4TH	Protective Materials
13TH	1ST	Lead
	2ND	Steel tapes, wires and strips
	3RD	Other Materials
	4TH	Thermocouple materials
14TH	1ST	Bimetals
	2ND	Soldering Materials
	3RD	Fuse and Fuse materials.
	4TH	Dehydrating material.
15TH	1ST	TEST
	2ND	TEST
	3RD	TEST
	4TH	TEST

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Discipline : **ELECTRICAL ENGINEERING**	Semester : **3rd**	Name of the Teaching Faculty: **RAJASRI TRIPATHY**
Subject: **ENVIRONMENTAL STUDIES**	No. of days/per week class allotted: **05**	Semester From date : 01/08/ 2023 To:- 30/11/2023 No. of weeks:15
Week	**Class Day**	**Theory Topics**
1ST	1ST	Multidisciplinary nature of environmental studies- Introduction,
	2ND	Definition , Scope and importance
	3RD	Need for public awareness
	4TH	Doubt clearing
	5TH	Unit-2- Natural resources- Introduction , definition, Associated problems
2ND	1ST	Forest Resources- Use & over exploitation, deforestation, Case sutdies
	2ND	Timber extraction, mining, dams and their effects on forests and tribal people
	3RD	Water resources- use & over utilization of surface & ground water, floods, drought
	4TH	Conflicts over water, dams benefits and problems
	5TH	Mineral resources- use & exploitation, environmental effects of extracting and using mineral resources
3RD	1ST	Food resources- World food problem, Changes caused by agriculture & over grazing,
	2ND	Effects of modern agriculture, fertilizers & pesticide problems, water logging & salinity
	3RD	Energy resources- Growing energy need, Renewable & non-renewable energy source, use of alternate energy sources
	4TH	Case studies, Land resources- land as a resource, land degradation, man induces landslides,
	5TH	Soil erosion, desertification
4TH	1ST	Role of individual in conservation of natural resources, Equitable use of resources for sustainable life styles
	2ND	Unit-3- Ecosystem: concept of ecosystem, structure of ecosystem
	3RD	Function of ecosystem, Producers, consumers,decomposers
	4TH	Energy flow in eco system ,ecological succession
	5TH	Food chain, food web, ecological pyramid
5TH	1ST	Forest ecosystem- definition, types, characteristics
	2ND	Forest ecosystem- structure & function
	3RD	Pond ecosystem
	4TH	Stream ecosystem
	5TH	Lake ecosystem
6TH	1ST	River ecosystem

	2ND	Ocean ecosystem
	3RD	Estuaries ecosystem
	4TH	Unit -4- Biodiversity & its conservation: introduction, definition, genetics, species, and ecosystem diversity
	5TH	Biogeographically classification of India
7TH	1ST	Value of biodiversity
	2ND	Biodiversity at global level
	3RD	Biodiversity at national level
	4TH	Habitat loss, poaching of wild life
	5TH	Man wildlife conflicts
8TH	1ST	Doubt clearing
	2ND	Unit-5- Environmental pollution: introduction, definition
	3RD	Air pollution
	4TH	Control of air pollution
	5TH	Water pollution
9TH	1ST	Control of water pollution
	2ND	Soil pollution
	3RD	Marine pollution
	4TH	Noise pollution
	5TH	Thermal pollution
10TH	1ST	Nuclear pollution
	2ND	Solid waste management- causes, effect
	3RD	Control measures
	4TH	Waste management
	5TH	Role of individual in prevention of pollution
11TH	1ST	Flood management
	2ND	Earth quake magement
	3RD	Cyclone management
	4TH	Landslides management
	5TH	Unit-6- Social issues & the environment: From unsustainable to sustainable development, urban problems related to energy.
12TH	1ST	Water conservation , rain water harvesting
	2ND	Water shed management,resettlement and rehabilitation of people; its problem and concern
	3RD	Environmental ethics: issue and possible solutions.
	4TH	Climate change, global warming
	5TH	Acid rain , ozone layer depletion,
13TH	1ST	Nuclear accidents and holocaust,
	2ND	case studies
	3RD	Air (prevention and control of pollution) Act
	4TH	Water (prevention and control of pollution) Act
	5TH	Public awareness
14TH	1ST	Doubt clearing
	2ND	Unit 7- Human population and the Environment: population growth and variation among nations (introduction)
	3RD	population growth and variation among nations
	4TH	Population explosion, family welfare program
	5TH	Environment and human health
15TH	1ST	Human rights

	2ND	Value education
	3RD	Role of information technology in environment and human health
	4TH	Doubt clearing, revision
	5TH	Revision and Previous year question discussion

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