SSB REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY,CHITRADA,MAYURBHANJ

THEORY LESSON PLAN

BRANCH:ELECTRONICS & TELE-COMMUNICATION ENGG.	SESSION:2024-25(WINTER))	SEMESTER:3RD
NAME OF FACULTY:	SUBJECT: (Th-1)ENGINEERING MATHEMATICS – III	
NO OF CLASSES/WEEK GIVEN AS PER SYLLABUS=04	DATE OF SEMESTER STARTING 01/07/2024	DATE OF SEMESTER CLOSING
NO OF CLASSES/WEEK GIVEN AS PER TIME TABLE=04	TOTAL NOS OF WORKING DAYS AS PER SCTE&VT:	

SL.NO	CHAPTER	NAME OF THE TOPIC	AS PER SYLLABUS NUMBER OF CLASSES ALLOTED	AS PER PLAN NO. OF CLASSES REQUIRED TO COMPLETE	DETAILS CONTENTS OF THIS CHAPTER
1	1	Complex Numbers	6	6	1.1 Real and Imaginary numbers. 1.2 Complex numbers, conjugate complex numbers, Modulus and Amplitude of a complex number. 1.3 Geometrical Representation of Complex Numbers. 1.4 Properties of Complex Numbers. 1.5 Determination of three cube roots of unity and their properties. 1.6 De Moivre's theorem 1.7 Solve problems on 1·1 - 1·6
2	2	Matrices	4	4	2.1. Define rank of a matrix. 2.2. Perform elementary row transformations to determine the rank of a matrix. 2.3. State Rouche's theorem for consistency of a system of linear equations in unknowns. 2.4. Solve equations in three unknowns testing consistency. 2.5. Solve problems on 2.1 – 2.4
3	3	Linear Differential Equations	10	10	3.1. Define Homogeneous and Non – Homogeneous Linear Differential Equations with constant coefficients with examples. 3.2. Find general solution of linear Differential Equations in terms of C.F. and P.I. 3.3. Derive rules for finding C.F. And P.I. in terms of operator D, excluding [1/f(D)]x^n. 3.4. Define partial differential equation (P.D.E) . 3.5. Form partial differential equations by eliminating arbitrary constants and arbitrary functions. 3.6.Solve partial differential equations of the form Pp + Qq = R 3.7. Solve problems on 3.1- 3.6

4	4	Laplace Transforms	12	12	4.1. Define Gamma function and and $\Gamma(n+1)=n!$ and find $\Gamma(1/2)=\sqrt{\pi}$ 4.2. Define Laplace Transform of a function f(t) and Inverse Laplace Transform . 4.3. Derive L.T. of standard functions and explain existence conditions of L.T. 4.4. Explain linear, shifting property of L.T. 4.5. Formulate L.T. of derivatives, integrals, multiplication by t^n and division by t. 4.6. Derive formulae of inverse L.T. and explain method of partial fractions . 4.7. solve problem on 4.1- 4.6
5	5	Fourier Series	12	12	5.1. Define periodic functions. 5.2. State Dirichlet's condition for the Fourier expansion of a function and it's convergence 5.3. Express periodic function f(x) satisfying Dirichlet's conditions as a Fourier series. 5.4. State Euler's formulae. 5.5. Define Even and Odd functions and find Fourier Series in ($0\leq X\leq 2\pi$ and $-\pi\leq X\leq\pi$). 5.6. Obtain F.S of continuous functions and functions having points of discontinuity in ($0\leq X\leq 2\pi$ and $-\pi\leq X\leq\pi$) 5.7. Solve problems on 5.1 – 5.6
6	6	Numerical Methods	4	4	6.1. Appraise limitation of analytical methods of solution of Algebraic Equations. 6.2. Derive Iterative formula for finding the solutions of Algebraic Equations by : 6.2.1. Bisection method 6.2.2. Newton- Raphson method 6.3. solve problems on 6.2
7	7	Finite difference and interpolation	12	12	7.1. Explain finite difference and form table of forward and backward difference. 7.2. Define shift Operator(E) and establish relation between E & difference operator (Δ) 7.3. Derive Newton's forward and backward interpolation formula for equal intervals. 7.4. State Lagrange's interpretation formula for unequal intervals. 7.5. Explain numerical integration and state: 7.5.1. Newton's Cote's formula. 7.5.2. Trapezoidal rule. 7.5.3. Simpson's 1/3rd rule 7.6. Solve problems on 7.1- 7.5

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THEORY LESSON PLAN

BRANCH:ELECTRONICS & TELE-COMMUNICATION ENGG.	SESSION:2024-25(WINTER))	SEMESTER:3RD
NAME OF FACULTY:SK MINAZ KADERI	SUBJECT: (TH-2)CIRCUIT THEORY	
NO OF CLASSES/WEEK GIVEN AS PER SYLLABUS=04	DATE OF SEMESTER STARTING 01/07/2024	DATE OF SEMESTER CLOSING
NO OF CLASSES/WEEK GIVEN AS PER TIME TABLE=04	TOTAL NOS OF WORKING DAYS AS PER SCTE&VT:	

SL.NO	CHAPTER	NAME OF THE TOPIC	AS PER SYLLABUS NUMBER OF CLASSES ALLOTED	AS PER PLAN NO. OF CLASSES REQUIRED TO COMPLETE	DETAILS CONTENTS OF THIS CHAPTER
1	1	CIRCUIT ELEMENTS& ENERGY SOURCES	6	6	1.1 Circuit elements (Resistance, Inductance, Capacitance), Scope of network analysis & synthesize 1.2 Voltage Division & Current Division, Energy Sources 1.3 Electric charge, electric current, Electrical energy, Electrical potential, R-L-C parameters, Active& Passive Elements. 1.4 Energy Sources, Current and voltage sources and their transformation & mutual inductance 1.5 Star – Delta transformation
2	2	NETWORK THEOREMS	12	12	2.1 Nodal & Mesh Analysis of Electrical Circuits with simple problem. 2.2 Thevenin's Theorem, Norton's Theorem, Maximum Power transfer Theorem, Superposition Theorem, Millman Theorem, Reciprocity Theorem-Statement,Explanation & applications 2.3 Solve numerical problems of above
3	3	Power Relation in AC circuits & Transient Response of passive circuits	12	12	3.1 Definition of frequency, Cycle, Time period, Amplitude, Average value, RMS value,Instantaneous power & Form factor, Apparent power, Reactive power, power Triangle of AC Wave. 3.2 Phasor representation of alternating quantities 3.3 Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor. 3.4 DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle 3.5 Define Time Constant of the above Circuit 3.6 Solve numerical simple problems of above Circuit.

4	4	RESONANCE AND COUPLED CIRCUITS	10	10	4.1 Introduction to resonance circuits & Resonance tuned circuit, 4.2 Series& Parallel resonance 4.3 Expression for series resonance, Condition for Resonance, Frequency of Resonance, Impedance, Current, Voltage, power, Q Factor and Power Factor of Resonance, Bandwidth in term of Q. 4.4 Parallel Resonance (RL, RC& RLC)& derive the expression 4.5 Comparisons of Series & Parallel resonance& applications 4.6 simple problems of above Circuit
5	5	LAPLACE TRANSFORM AND ITS APPLICATIONS	8	8	5.1 Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-L, R-C &R-L-C 5.2 Analysis and derive the equations for circuit parameters of Impulse response of R-L, RC, R-L-C
6	6	Two Port Network Analysis	5	5	6.1 Network elements, ports in Network (One port, two port), 6.2 Network Configurations (T & pie). 6.3 Open circuit (Z-Parameter)& Short Circuit(Y-Parameter) Parameters- Calculate open & short Circuit Parameters for Simple Circuits & its conversion 6.4 h- parameter (hybrid parameter) Representation 6.5 Define T-Network & pie – Network
7	7	FILTERS& ATTENUATORS	7	7	7.1 Ideal &Practical filters and its applications, cut off frequency, passband and stop band. 7.2 Classify filters- low pass, high pass, band pass, band stop filters & study their Characteristics. 7.3 Butterworth Filter Design 7.4 Attenuation and Gain, Bel , Decibel & neper and their relations. 7.5 Attenuators& its applications. Classification-T- Type & PI – Type attenuators

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THEORY LESSON PLAN

BRANCH:ELECTRONICS & TELE-COMMUNICATION ENGG.	SESSION:2024-25(WINTER))	SEMESTER:3RD
NAME OF FACULTY:TAPAS KUMAR NAYAK	SUBJECT: DIGITAL ELECTRONICS (TH-3)	
NO OF CLASSES/WEEK GIVEN AS PER SYLLABUS=04	DATE OF SEMESTER STARTING 01/07/2024	DATE OF SEMESTER CLOSING
NO OF CLASSES/WEEK GIVEN AS PER TIME TABLE=04	TOTAL NOS OF WORKING DAYS AS PER SCTE&VT:	

SL.NO	CHAPTER	NAME OF THE TOPIC	AS PER SYLLABUS NUMBER OF CLASSES ALLOTED	AS PER PLAN NO. OF CLASSES REQUIRED TO COMPLETE	DETAILS CONTENTS OF THIS CHAPTER
1	1	Basics of Digital Electronics	12	12	1.1 Number System-Binary, Octal, Decimal, Hexadecimal - Conversion from one system to another number system. 1.2 Arithmetic Operation-Addition, Subtraction, Multiplication, Division, 1's & 2's complement of Binary numbers& Subtraction using complements method 1.3 Digital Code & its application & distinguish between weighted & non-weight Code, Binary codes, excess-3 and Gray codes. 1.4 Logic gates: AND,OR,NOT,NAND,NOR, Exclusive-OR, Exclusive-NOR--Symbol, Function, expression, truth table & timing diagram 1.5 Universal Gates& its Realisation 1.6 Boolean algebra, Boolean expressions, Demorgan's Theorems. 1.7 Represent Logic Expression: SOP & POS forms 1.8 Karnaugh map (3 & 4 Variables)&Minimization of logical expressions ,don't care conditions
2	2	Combinational logic circuits	12	12	2.1 Half adder, Full adder, Half Subtractor, Full Subtractor, Serial and Parallel Binary 4 bit adder. 2.2 Multiplexer (4:1), De- multiplexer (1:4), Decoder, Encoder, Digital comparator (3 Bit) 2.3 Seven segment Decoder
3	3	Sequential logic Circuitss	12	12	3.1 Principle of flip-flops operation, its Types, 3.2 SR Flip Flop using NAND,NOR Latch (un clocked) 3.3 C l o c k e d SR,D,JK,T,JK Master Slave flip-flops-Symbol, logic Circuit, truth table and applications 3.4 Concept of Racing and how it can be avoided.

4	4	Registers, Memories & PLD	8	8	4.1 Shift Registers-Serial in Serial -out, Serial- in Parallel-out, Parallel in serial out and Parallel in parallel out 4.2 Universal shift registers-Applications. 4.3 Types of Counter & applications 4.4 Binary counter, Asynchronous ripple counter (UP & DOWN), Decade counter. Synchronous counter, Ring Counter. 4.5 Concept of memories-RAM, ROM, static RAM, dynamic RAM,PS RAM 4.6 Basic concept of PLD & applications
5	5	A/D and D/A Converters	7	7	5.1 Necessity of A/D and D/A converters. 5.2 D/A conversion using weighted resistors methods. 5.3 D/A conversion using R-2R ladder (Weighted resistors) network. 5.4 A/D conversion using counter method. 5.5 A/D conversion using Successive approximate method
6	6	LOGIC FAMILIES	9	9	6.1 Various logic families &categories according to the IC fabrication process 6.2 Characteristics of Digital ICs- Propagation Delay, fan-out, fan-in, Power Dissipation ,Noise Margin ,Power Supply requirement &Speed with Reference to logic families. 6.3 Features, circuit operation &various applications of TTL(NAND), CMOS (NAND & NOR)

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THEORY LESSON PLAN					
BRANCH:ELECTRONICS & TELE-COMMUNICATION ENGG.				SESSION:2024-25(WINTER)	SEMESTER:3RD
NAME OF FACULTY:: BASANTA HANSDAH				SUBJECT: (TH-4)ELECTRONICS MEASUREMENT & INSTRUMENTATION	
NO OF CLASSES/WEEK GIVEN AS PER SYLLABUS=04				DATE OF SEMESTER STARTING 01/07/2024	DATE OF SEMESTER CLOSING
NO OF CLASSES/WEEK GIVEN AS PER TIME TABLE=04				TOTAL NOS OF WORKING DAYS AS PER SCTE&VT:	
SL.NO	CHAPTER	NAME OF THE TOPIC	AS PER SYLLABUS NUMBER OF CLASSES ALLOTED	AS PER PLAN NO. OF CLASSES REQUIRED TO COMPLETE	DETAILS CONTENTS OF THIS CHAPTER
1	1	Qualities of Measurement	5	5	1.1 Discuss the Static Characteristics, 1.2 Accuracy, sensitivity, reproducibility & static error of instruments 1.3 Dynamic characteristics& speed of instruments. 1-4 Errors of an instrument & explain various types.
2	2	Indicating Instruments	10	10	2.1 Introduction to Indicator & Display devices & its types 2.2 Basic principle of meter movement, permanent magnetic moving coil movement & its advantages & disadvantages. 2.3 Operation of Moving Iron Instrument 2.4 Basic principle of operation of DC Ammeter and Multi range Ammeter 2.5 Basic principle of operation of AC Ammeter and Multi range Ammeter 2-6 Basic principle of operation of DC Voltmeter and its applications 2.7 Basic principle of operation of AC Voltmeter and its application 2.8 Basic principle of Ohm Meter (Series & Shunt type) 2.9 Basic principle of Analog Multimeter, its types & applications 2-10 Operation of Q meter and its essentials

3	3	Digital Instruments	10	10	3.1 Principle of operation of Ramp type Digital Voltmeter & applications 3.2 Operation of display of 3 1/2, 4 1/2– Digital Multimeter & Resolution and Sensitivity 3.3 Basic principle of operation of working of Digital Multimeterits types & applications 3.4 Basic principle of operation of working of Digital Frequency Meter 3.5 Operation of working of Digital Measurement of Time 3.6 Measurement of Frequency. 3.7 Principle of operation of working of Digital Tachometer 3.8 Principle of operation of working of Automation in Digital Instruments (Polarity Indication, Ranging, Zeroing & Fully Automatic) 3.9 Block diagram of LCR meter & its working principle.
4	4	Oscilloscope	8	8	4.1 Basic principle of Oscilloscope& its Block Diagram 4.2 Basic principle & Block diagram of CRO, Dual Trace Oscilloscope & its specification 4.3 CRO Measurements, Lissajous figures 4.4 Applications of Oscilloscope (Voltage period & frequency measurement) 4.5 Operation of Digital Storage Oscilloscope& High frequency Oscilloscope
5	5	Bridges	11	11	5.1 Types of Bridges (DC& Ac Bridges) 5.2 DC Bridges (Measurement of Resistance by Wheatstone's Bridge) 5.3 AC bridges (Measurement of inductance by Maxwell's Bridge & by Hay's Bridge) 5.3 Measurement of capacitance by Schering's Bridge & DeSauty Bridge. 5.5 Working principle of Q meter its circuit diagram & measurement of Low impedance 5.6 Measurement of frequency 5.7 LCR Meter & its measurements
6	6	Transducers & Sensors	11	11	6.1 Parameter, method of Selecting & advantage of Electrical Transducer & Resistive Transducer 6.2 Working principle of Strain Gauges, define Strain Gauge (No mathematical Derivation) 6.3 Working principle of LVDT 6.4 Working principle of capacitive transducers (pressure) 6.5 Working principle of Load Cell (Pressure Cell) 6.6 Working principle of Temperature Transducer (RTD, Optical Pyrometer, Thermocouple, Thermister) 6.7 Working principle of Current transducer and KW Transducer. 6.8 Working principle of Proximity & Light sensors

7	7	Signal Generator, Wave Analyser & DAS	5	5	7.1 General aspect & classification of Signal generators 7.2 Working principle of AF Sine & Square wave generator. 7.3 Working principle of the Function Generator 7.4 Function of basic Wave Analyser& Spectrum Analyser 7.5 Basic concept of Data Acquisition System (DAS)

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THEORY LESSON PLAN

BRANCH:ELECTRONICS & TELE-COMMUNICATION ENGG.				SESSION:2024-25(WINTER))	SEMESTER:3RD
NAME OF FACULTY:				SUBJECT: ENVIRONMENTAL STUDIES (TH-5)	
NO OF CLASSES/WEEK GIVEN AS PER SYLLABUS= 04				DATE OF SEMESTER STARTING 01/07/2024	DATE OF SEMESTER CLOSING
NO OF CLASSES/WEEK GIVEN AS PER TIME TABLE=04				TOTAL NOS OF WORKING DAYS AS PER SCTE&VT:	
SL.NO	CHAPTER	NAME OF THE TOPIC	AS PER SYLLABUS NUMBER OF CLASSES ALLOTED	AS PER PLAN NO. OF CLASSES REQUIRED TO COMPLETE	DETAILS CONTENTS OF THIS CHAPTER
1	1	The Multidisciplinary nature of environmental studies:	4	4	1.1 Definition, scope and importance. 1.2 Need for public awareness.
2	2	Natural Resources:	10	10	2.1 Natural resources and associated problems. 2.1.1. Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction mining, damsandtheireffectsonforestsandtribalpeople. 2.1.2. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems. 2.1.3. Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources. 2.1.4. Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizers- pesticides problems, water logging, salinity,. 2.1.5. Energy Resources: Growing energy need, renewable and non-renewable energy sources, use of alternate energy sources, case studies. 2.1.6. Land Resources: Land as a resource, land degradation, man induceslandslides, soil erosion, and desertification. 2.2 Role of individual in conservation of natural resources. 2.3 Equitable use of resources for sustainable life styles.

3	3	Systems:	8	8	3.1. Concept of an eco system. 3.2. Structure and function of an eco system. 3.3. Producers, consumers, decomposers. 3.4. Energy flow in the eco systems. 3.5. Ecological succession. 3.6. Food chains, food webs and ecological pyramids. 3.7. Introduction, types, characteristic features, structure and function of the following eco system: 3.8. Forest ecosystem: 3.9. Aquatic eco systems (ponds, streams, lakes, rivers, oceans, estuaries).
4	4	Biodiversity and it's Conservation:	8	8	4.1. Introduction-Definition: genetics, species and ecosystem diversity. 4.2. Biogeographically classification of India. 4.3. Value of biodiversity: consumptive use, productive use, social ethical, aesthetic and optin values. 4.4. Biodiversity at global, national and local level. 4.5. Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife conflicts.
5	5	Environmental Pollution:	12	12	5.1. Definition Causes, effects and control measures of: 5.1.1 Air pollution. 5.1.2 Water pollution. 5.1.3 Soil pollution 5.1.4 Marine pollution 5.1.5 Noise pollution. 5.1.6 Thermal pollution 5.1.7 Nuclear hazards. 5.2. Solid waste Management: Causes, effects and control measures of urban and industrial wastes. 5.3. Role of an individual in prevention of pollution. 5.4. Disaster management: Floods, earth quake, cyclone and landslides
6	6	Social issues and the Environment:	10	10	6.1. Form unsustainable to sustainable development. 6.2. Urban problems related to energy. 6.3. Water conservation, rain water harvesting, water shed management. 6.4. Resettlement and rehabilitation of people; its problems and concern. 6.5. Environmental ethics: issue and possible solutions. 6.6. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. 6.7. Air (prevention and control of pollution) Act. 6.8. Water (prevention and control of pollution) Act. 6.9. Public awareness.

7	7	Human population and the environment:	8	8	7.1. Population growth and variation among nations. 7.2. Population explosion- family welfare program. 7.3. Environment and humanhealth. 7.4. Human rights. 7.5. Value education 7.6. Role of information technology in environment and human health.

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