TEACHING PLAN

Name: Dr Pronob Jyoti Saikia, J.B. College,Jorhat. Course: B.Sc Semester: First

Department: Electronics Sc. Programme: Honours (Core) Class allotted: 5 per week (Theory), 2 per week (Lab)

Paper/Unit	Course Content	Key aspects	Teaching Methods	Classes required/ week
ELT(C)/I	**Basic Circuit Concepts**: Voltage and Current Sources, Resistors: Fixed and Variable resistors, Construction and Characteristics, Color coding of resistors, resistors in series and parallel. Inductors: Fixed and Variable inductors, Self and mutual inductance, Faraday's law and Lenz's law of electromagnetic induction, Energy stored in an inductor, Inductance in series and parallel, Testing of resistance and inductance using multimeter. Capacitors: Principles of capacitance, Parallel plate capacitor, Permittivity, Definition of Dielectric Constant, Dielectric strength, Energy stored in a capacitor, Air, Paper, Mica, Teflon, Ceramic, Plastic and Electrolytic capacitor, Construction and application, capacitors in series and parallel, factors governing the value of capacitors, testing of capacitors using multimeter.	Introduction. Concept and its applications in circuit. Concept of Inductance. Statement explanation and derivation. Concept and types. Derivation and applications.	1. Lecture Method using White Board. 2. Practical demonstration	
ELT(C)/II	**Circuit Analysis:** Kirchhoff's Current Law (KCL), Kirchhoff's Voltage Law (KVL), Node Analysis, Mesh Analysis, Star-Delta Conversion. **DC Transient Analysis:** RC Circuit- Charging and discharging with initial charge, RL Circuit with Initial Current, Time Constant, RL and RC Circuits With Sources, DC Response of Series RLC Circuits.	Statement and explanation Explanation and application	1. Lecture Method using White Board. 2. Practical demonstration	5

ELT(C)/III	**AC Circuit Analysis:** Sinusoidal Voltage and Current, Definition of Instantaneous, Peak, Peak to Peak, Root Mean Square and Average Values. Voltage-Current relationship in Resistor, Inductor and Capacitor, Phasor, Complex Impedance, Power in AC Circuits: Instantaneous Power, Average Power, Reactive Power, Power Factor. Sinusoidal Circuit Analysis for RL, RC and RLC Circuits. Resonance in Series and Parallel RLC Circuits, Frequency Response of Series and Parallel RLC Circuits, Quality (Q) Factor and Bandwidth. Passive Filters: Low Pass, High Pass, Band Pass and Band Stop **(qualitative ideas only).**	Definition and explanation Definition and explanation	1. Lecture Method using White Board.	
ELT(C)/IV	**Network Theorems**: Principal of Duality, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Reciprocity Theorem, Millman's Theorem, Maximum Power Transfer Theorem. AC circuit analysis using Network theorems. Two Port Networks: Impedance (Z) Parameters, Admittance (Y) Parameters, Transmission (ABCD) Parameters.	Statement and Proof	1. Lecture Method using White Board.	

Signature of the Teacher

TEACHING PLAN

Name: Dr Pronob Jyoti Saikia, J.B. College, Jorhat. Course: B.Sc Semester: Third

Department: Electronics Sc. Programme: Honours (General) Class allotted: 4 per week (Theory) 2 per week (Lab)

Paper/Unit	Course Content	Key aspects	Teaching Methods	Classes required/week
ELT(G)/I	Power supply: The ideal rectifier, Half-wave rectifier, Full-wave rectifier, Bridge rectifier, voltage doubler, capacitive filter, L-section filter, pi-section filter, controlled rectifiers, Electronic regulated power supply.	Introduction. Concept and applications.	1. Lecture Method using White Board.	
ELT(G)/II	Analysis of transistor amplifiers, Transistor biasing, stabilization, Two-port representation of a transistor, AC equivalent circuit using h-parameters, Determination - of h parameters, Analysis of transistor amplifier using h parameters. Classification of amplifiers; Distortion in amplifier, amplitude, frequency and phase distortion, Impedance matching, frequency range of amplifiers, Transistor as an amplifier in CE configuration, load line analysis, operating point, voltage gain, dc and ac equivalent circuits.	Concept and explanation and derivation.	1. Lecture Method using White Board. 2. Practical demonstration	4
ELT(G)/III	R-C coupled amplifiers, Impedance coupled amplifiers, Transformer coupled amplifier, Band pass amplifiers, Video amplifiers, direct coupled amplifiers, Noise in amplifiers, low noise amplifiers. Power amplifiers, efficiency of amplifiers, class A amplifiers, push-pull class A operation, parallel class A operation, class B audio frequency amplifiers, class B and C radio frequency amplifiers, simplified analysis of linear class B and class C	Concept and types. Derivation and applications.	1. Lecture Method using White Board.	

	amplifiers.			
ELT(G)/IV	Feedback amplifiers - The feedback concept, feedback network, advantage of negative feedback's characteristics of negative feedback amplifiers, effect of negative feedback an input and output impedances and on bandwidth, high input impedance transistor circuits, emitter follower and biasing, cascade configuration, Design of RC - coupled cascaded audio amplifiers, Basic design considerations for preamplifiers.	Explanation and application	1. Lecture Method using White Board.	
ELT(G)/ V	Oscillator: Properties of feedback circuits, feedback requirements for oscillator, generation of continuous oscillation, Tuned collector oscillator, Hartley oscillator, Colpitts oscillator, phase-shift oscillator, Wien-Bridge oscillator, crystal oscillator, VHF oscillators, relaxation oscillators.	Explanation and operation	1. Lecture Method using White Board	
ELT(G)/VI	Integrated Circuits: Fabrication of monolithic integrated circuits, Integrated circuit component, operational amplifier, some applications of operational amplifiers, Measurement of operational amplifier parameters, Frequency response of operational amplifiers.	Explanation and application	1. Lecture Method using White Board	

Signature of the Teacher