Lesson Plan

Name of the Faculty :

Discipline : Electrical Engineering

Semester : 2nd Semester

Subject : ELECTRONICS - I

Lesson Plan Duration : 15-16 Week

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Electronic components	1	Identification and testing of electronic components such as resistor, inductor, capacitor, diode, transistor and different types of switches used in Electronic circuits
	2	Active and passive components	2	Measurement of resistances using multimeter and their comparison with colour code values
	3, 4	Concept of current and voltage sources, constant voltage and current sources, their graphical representation. Conversion of voltage source into current source and vice-versa	3	V-I characteristics of a Semiconductor diode and to calculate its static and dynamic resistance
	5	Difference between actual voltage source and constant voltage source	4	V-I characteristics of a zenor diode and finding its reverse breakdown voltage
	6	Atomic structure, crystalline structure	5	Fabrication of a zenor diode voltage stabilizer circuit using PCB
	7	Energy band theory of crystals, energy band structure of insulator	6	Observation of input and output wave shapes of a half-wave rectifier and verification of relationship between dc output and ac input voltage
	8	semiconductor	7	Observation of input and output wave shapes of a full wave rectifier and verification and relationship between dc and ac input voltage
	9	conductor	8	Observation of input and output wave shapes of a full wave rectifier with (i) shunt capacitor) (ii) series inductor (iii) circuits
	10	recombination of electron hole pairs.	9	Plotting input and output characteristics of a transistor in CB configuration
	11	Silicon versus Germanium for mobility and conductivity	10	Plotting input and output characteristics of a transistor in CE configuration
	12	Concept of Doping, intrinsic and	11	Measurement of operating point in

		extrinsic semiconductors		case of (i) fixed biased circuit (ii) potential divider biasing circuit and to observe the effect of temperature variation on the operating point.
	13, 14	Effect of temperature on intrinsic and extrinsic semiconductors	12	To measure the voltage gain and band width by plotting frequency response curve of a single stage amplifier using CE configuration at different loads
	15, 16, 17, 18	PN Junction, mechanism of current flow in PN junction, drift and diffusion currents, depletion layer, potential barrier, effect of forward and reverse biasing in a PN junction. Concept of junction capacitance in forward and reverse biased conditions. Breakdown mechanism	13	To study the effect of coupling capacitor on lower cut off frequency and upper cut off frequency by plotting frequency response curve of a two stage RC coupled amplifier
	19	Ideal diode, Semiconductor diode characteristics, static and dynamic resistance	14	To plot V-I characteristics of a FET
	20, 21	Use of diode as half wave and full wave rectifiers (centre tapped and bridge type), relation between DC output and AC input voltage, rectifier efficiency		
	22, 23	Concept of ripples, filter circuits – shunt capacitor, series inductor, and pie (π) filters and their applications		
	24	Diode ratings/specifications		
	25, 26, 27, 28, 29, 30	Various types of diodes such as zener diode, varactor diode, schottky diode, light emitting diode, tunnel diode, photo diode; their working characteristics and applications		
	31	Zener diode and its characteristics		
	32	Use of zener diode for voltage stabilization		
	33, 34	Concept of junction transistor, PNP and NPN transistors, their symbols and mechanism of current flow		
	35	Transistor configurations: common base (CB), common emitter (CE) and common collector (CC), current relation and their input/output characteristics; comparison of the three configurations		
	36, 37	Transistor biasing, its need, operating point, effect of temperature on the operating point of a transistor and need of stabilization of operating point		
	38, 39	Different biasing circuits, limitations, simple problems to calculate operating point in different biasing circuits. Use of Thevenin's theorem to		

		determine operating point		
	40	Concept of h-parameters of a transistor		
	41	Use of data book to know the parameters of a given transistor		
	42, 43	Single stage transistor amplifier circuit in CE configuration, function of each component		
	44	Working of single stage transistor amplifier, physical and graphical explanation, phase reversal		
	45	Concept of DC and AC load line		
	46	Voltage gain of single stage transistor amplifier using characteristics of the device		
	47	Concept of input and output impedance		
	48	AC equivalent circuit of single stage transistor amplifiers		
	49	Calculation of voltage gain using AC equivalent circuit		
	50	Frequency response of a single stage transistor amplifier		
	51	Need of multi-stage transistor amplifiers – different types of couplings, their purpose and applications		
	52	Knowledge of various terms such as voltage gain, current gain		
	53	frequency response, decibel gain and band width		
	54	RC coupled two-stage amplifiers, circuit details, working, frequency response, applications		
	55	Loading effect in multistage amplifiers		
	56, 57	Elementary idea about direct coupled amplifier, its limitations and applications		
	58	Transformer coupled amplifiers, its frequency response		
	59	Effect of co-efficient of coupling on frequency response. Applications of transformer coupled amplifiers		
	60	Construction, operation, characteristics and applications of a N channel JFET and P channel JFET		
	61	JFET as an amplifier		
	62	Types, construction, operation, characteristics and applications of a MOSFET		
	63	Comparison between BJT, JFET and MOSFET		