

Lesson Plan

*Name of the Faculty: Mr. Revti Raman

Discipline : Electrical Engg.

Semester : 2nd

Subject : ELECTRONICS - I

Lesson Plan Duration: 15 weeks (from January, 2018 to April, 2018)

**Work Load (Lecture/Practical) per week (in hours): Lectures-03, Practicals-06

Week	Theory		Practical	
	Lecture day	Topic (including assignment/test)	Practical Day	Topic
1st	1st.	<u>Semiconductor Diodes</u> PN Junction, mechanism of current flow in PN junction,	1st.	1. a) Identification and testing of electronic components such as resistor, inductor, capacitor, diode, transistor and different types of switches used in Electronic circuits
	2nd.	drift and diffusion currents, depletion layer, potential barrier		
	3rd.	Effect of forward and reverse biasing in a PN junction. Concept of junction capacitance in forward and reverse biased conditions.		
2nd	1st.	Ideal diode, Semiconductor diode characteristics, static and dynamic resistance	2nd.	1. b) Measurement of resistances using multimeter and their comparison with colour code values
	2nd.	Use of diode as half wave and full wave rectifiers (centre tapped and bridge type), relation between DC output and AC input voltage		
	3rd.	Rectifier efficiency Concept of ripples,		
3rd	1st.	filter circuits – shunt capacitor, series inductor, and pie (π) filters and their applications	3rd.	2. To plot V-I characteristics of a Semiconductor diode and to calculate its static and dynamic resistance
	2nd.	Various types of diodes such as zener diode, varactor diode, schottky diode		
	3rd.	light emitting diode, photo diode; their working characteristics and applications		
4th	1st.	Zener diode and its characteristics Use of zener diode for voltage stabilization	4th.	3. To plot V-I characteristics of a zener diode and finding its reverse breakdown
	2nd.	<u>Bi-polar Transistors</u>		

		Concept of junction transistor		voltage
	3rd.	PNP and NPN transistors, their symbols and mechanism of current flow		
5th	1st.	Transistor configurations: common base (CB)	5th.	4. Observation of input and output wave shapes of a half-wave rectifier and verification of relationship between dc output and ac input voltage
	2nd.	common emitter (CE) and common collector (CC)		
	3rd.	current relation and their input/output characteristics		
6th	1st.	comparison of the three configurations	6th.	5. Observation of input and output wave shapes of a full wave rectifier and verification of relationship between dc output and ac input voltage
	2nd.	<u>Transistor Biasing and Stabilization</u> Transistor biasing, its need, operating point		
	3rd.	effect of temperature on the operating point of a transistor.		
7th	1st.	need of stabilization of operating point.	7th.	6. Observation of input and output wave shapes of a full wave rectifier with (i) shunt capacitor) (ii) series inductor (iii) π filter circuits
	2nd.	Different biasing circuits, limitations		
	3rd.	simple problems to calculate operating point in different biasing circuits.		
8th	1st.	Concept of h-parameters of a transistor.	8th.	7. Plotting input and output characteristics of a transistor in CB configuration
	2nd.	<u>Single-Stage Transistor Amplifiers</u> Single stage transistor amplifier circuit in CE configuration.		
	3rd.	Function of each component.		
9th	1st.	Working of single stage transistor amplifier	9th.	8. Plotting input and output characteristics of a transistor in CE configuration
	2nd.	physical and graphical explanation,		
	3rd.	phase reversal		
10th	1st.	Concept of DC and AC load line	10th.	9. Measurement of operating point in case of (i) fixed biased circuit (ii) potential divider biasing circuit and to observe the effect of temperature variation on the operating point.
	2nd.	Voltage gain of single stage transistor amplifier using characteristics of the device		
	3rd.	Concept of input and output impedance		
11th	1st.	AC equivalent circuit of single stage		

		transistor amplifiers		
	2nd.	Frequency response of a single stage transistor amplifier		
	3rd.	<u>Multi-Stage Transistor Amplifiers</u> Need of multi-stage transistor amplifiers – different types of couplings their purpose and applications.		
12th	1st.	Knowledge of various terms such as voltage gain, current gain, power gain,		
	2nd.	frequency response, decibel gain and band width RC coupled two-stage amplifiers, circuit details,		
	3rd.	working, frequency response, applications Loading effect in multistage amplifiers		
13th	1st.	Emitter follower and its applications for input impedance and load coupling		
	2nd.	Elementary idea about direct coupled amplifier, its limitations and applications		
	3rd.	Transformer coupled amplifiers, its frequency response.		
14th	1st.	Effect of co-efficient of coupling on frequency response.		
	2nd.	Applications of transformer coupled amplifiers		
	3rd.	<u>Field Effect Transistor (FET)</u> Construction, operation, characteristics and applications of a N channel JFET and P channel JFET		
15th	1st.	Types, construction, operation, characteristics and applications of a MOSFET		
	2nd.	Comparison between BJT, JFET and MOSFET		
	3rd.	Power MOSFET		