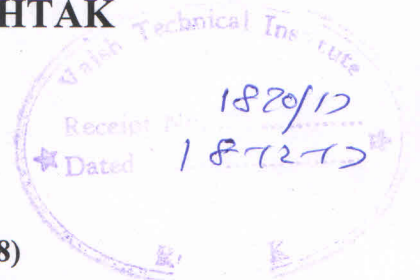


# ELECTRONICS DEPARTMENT, VTI ROHTAK

**Name of Faculty :** Vikas Jain (Theory and Practical)  
**Discipline :** Electronics and Communication  
**Semester :** 2nd Sem.  
**Subject :** BASIC ELECTRONICS  
**Lesson Plan Duration :** 15 Weeks (From January 2018 to April 2018)



Week	Theory		Practical	
	Lecture Day	Topic (Including Assignment/Test)	Practical Day	Topic
1st	1st	Review of basic atomic structure and energy levels,	1st	1. Operation and use of the following instruments: Multi-meter, CRO, Signal generator, LCR meter, Regulated Power Supply by way of taking readings of relevant quantities with their help.
	2nd	concept of insulators, conductors and semi conductors,		
	3rd	atomic structure of Germanium (Ge) and Silicon (Si), covalent bonds		
2nd	4th	Concept of intrinsic and extrinsic semi conductor, process of doping.	2nd	2. Plotting of V-I characteristics of a PN junction diode
	5th	Energy level diagram of conductors, insulators and semi conductor		
	6th	Majority charge carriers; minority charge carriers		
3rd	7th	P and N type semiconductors and their conductivity	3rd	3. Plotting of V-I characteristics of a Zener diode
	8th	Effect of temperature on conductivity of intrinsic semi conductors.		
	9th	PN junction diode, mechanism of current flow in PN junction		
4th	10th	Forward and reverse biased PN junction.	4th	4. To observe output of clipping and clamping circuits.
	11th	Depletion layer, concept of junction capacitance in forward and reverse biased condition.		
	12th	Diode V-I characteristics,		
5th	13th	Si and Ge Diode	5th	5. Measurement of the voltage gain, input and output impedance in a single stage CE
	14th	Static and dynamic resistance and their value calculation from the characteristics.		
	15th	Application of diode as half-wave, full wave and bridge rectifiers		

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6th	16th	Peak Inverse Voltage, rectification efficiencies and ripple factor calculations,	6th	6. Design of following circuit on breadboard and observe the output of : a. Half-wave rectifier circuit using one diode b. Full-wave rectifier circuit using two diodes c. Bridge-rectifier circuit using four diodes
	17th	shunt capacitor filter, series inductor filter, LC and $\pi$ filters.		
	18th	Types of diodes, characteristics and applications of Zener diodes.		
7th	19th	Zener and avalanche breakdown	7th	Plotting of the wave shape of full wave rectifier with Shunt a. capacitor filter b. Series inductor filter
	20th	Clipping and Clamping Circuits		
	21st	Concept of a bipolar transistor, its structure		
8th	22nd	PNP and NPN transistors	8th	8. Plotting of input and output characteristics and calculation of parameters of
	23rd	Their symbols and mechanism of current flow		
	24th	Assignment No. 2 (Unit 2&3) Test 2		
9th	25th	Current relations in a transistor; concept of leakage current	9th	9. Plotting of input and output characteristics and calculation of parameters of transistors in CB configuration
	26th	CB, CE, CC configurations of a transistor;		
	27th	Input and output characteristics in CB and CE configurations; input and output dynamic resistance in CB and CE configurations;		
10th	28th	Current amplification factors. Comparison of CB, CE and CC Configurations;	10th	10. Measurement of voltage gain, input and output impedance in a single stage CE amplifier circuit
	29th	Transistor as an amplifier in CE Configuration; concept of DC load line		
	30th	calculation of current gain and voltage gain using DC load line.		



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	Lecture Day	Topic (Including Assignment/Test)	Practical Day	Topic
11th	31st	Concept of transistor biasing and selection of operating point. Need for stabilization of operating point	11th	11. Plotting of V-I characteristics of a FET based amplifier.
	32nd	Different types of biasing circuits.		
	33rd	Single stage transistor amplifier circuit, concept of dc and ac load line and its use.		
12th	34th	Explanation of phase reversal of output voltage with respect to input voltage.	12th	Experiment No. 1, 2 & 3 Repeat
	35th	Construction, operation and characteristics of FETs and their applications.		
	36th	Construction, operation and characteristics of a MOSFET in depletion and enhancement modes and its applications.		
13th	37th	CMOS - advantages and applications	13th	Experiment No. 4, 5 & 6 Repeat
	38th	Assinment No. 3 ( Unit 5 & 6) Test No.3		
	39th	Unit 1 Revision		
14th	40th	Unit 2	14th	Experiment No. 7, 8 & 9 Repeat
	41st	Unit 3 Revision		
	42nd	Unit 4 Revision		
15th	43rd	Unit 5 Revision	15th	Experiment No. 10 & 11 Repeat
	44th	Unit 6 Revision		
	45th	Full Syllabus Revision		