

GURU TEGH BAHADUR INSTITUTE OF TECHNOLOGY

LECTURE PLAN

AE -1

Paper Code: ECC-211		Paper: Analog Electronics-I
S.NO.	TOPICS	LECTURES
1	Introduction to P-N junction diode,	1
2	Open circuit P-N junction diode, Forward and reverse biased diode, I-V characteristics of diode, Diode Equation	2
3	Temperature dependence of diode. Breakdown phenomena, diffusion and transition capacitance of diode. Diode equivalent circuit, Ideal diode. Solar cell..	2
4.	Diode circuits: half-wave and full-wave rectifiers with capacitor filter, clamping and clipping circuits. Zener diodes as voltage regulator	4
5.	Bipolar Junction transistor (BJT): Structure, modes of operation, Configurations	1
6.	I-V characteristics, early effect, junction voltages; Transistor Biasing: Need of biasing, load line concept, fixed bias, self-bias, collector to base bias, stability factors, Current Mirrors;	4
7	Hybrid model of BJT amplifier, small signal analysis of CE BJT amplifier using h parameter	2
8	JFET: Physical structure, I-V characteristics;	1
9	MOSFET: Depletion and enhancement types, Physical structure and I-V characteristics; FET small-signal model (low & high frequency); MOSFET as resistance and switch	3
First term Exam		
10	Analysis of cascade amplifier (voltage gain, current gain, input and output impedances); Darlington pair, Cascode amplifier,	2
11	Types of coupling: DC, RC and Transformer; RC coupled Amplifier and its frequency response; Differential Amplifier: differential and Common mode operation, CMRR.	3
12	Power Amplifiers: Power dissipations in transistors, Amplifiers Classification, (Class-A, Class-B, Class-C, Class-AB) Efficiency analysis,	4

13	Push-pull and complementary Push-pull amplifiers, cross over distortion and harmonic distortion in push pull amplifier. efficiency, crossover distortion, class AB operation, Class C amplifier.	4
14	Feedback Amplifiers: Feedback concept, Classification of Feedback amplifiers, basic feedback topologies	2
15	Characteristics of Negative Feedback, Feedback and stability, gain margin, Noise margin,	3
16	Sinusoidal Oscillator, Barkhausen criterion, RC phase shift, LC (Colpitt's, Hartley, Clapp), Crystal Oscillator.	3