

Name of the Course: S.Y.B.Sc. SEM-IV - Paper II (2 credits)
MJ 6: Advanced Electronics-I

1.	Course Objectives (CO): After successful completion of this course students will be able to: CO 1. Explain basics of transistor, its parameters, different configurations, biasing and its different methods of biasing. CO2. Understand basics of OPAMP, its different parameters, concept of feedback and applications. CO3. Understand basics of counters and registers its different types and registers
2	Course Outcome OC: After successful completion of this course: OC 1. Students gain the basic knowledge of digital electronics and its applications. OC2. Students Comprehend knowledge about amplification, Transistor Biasing its different methods and its parameters. OC3.Students Understand basics of OPAMP, its parameters, feedback concept and its applications. OC4. Students will acquire a fundamental understanding of Flip-Flops, counters and registers with its application.
1.	Unit I: Analog Electronics (15 Lectures)
	1.Transistor Biasing:(Review of transistor terminals, transistor action, the symbol of transistor, transistor as an amplifier, CB, CE, CC connections: only circuit diagrams and respective current amplification factor) Faithful amplification, Inherent Variations of Transistor Parameters, Essentials of a Transistor Biasing Circuit, Stability Factor, Base Resistor Method, Emitter Bias Circuit, Voltage Divider Bias Method. 2.Operational Amplifiers: Introduction, Block diagram, Schematic symbol of OPAMP, ideal characteristics of OP AMP, Frequency Response of an OPAMP, Bandwidth of an OPAMP, slew rate, Virtual ground concept, Voltage gain, OPAMP with Negative feedback, Inverting Amplifier, Input and output impedance of inverting amplifier, Non-Inverting Amplifier, Voltage Follower, Summing Amplifier.
2	Unit-II: Digital Electronics: (15 Lectures)
	1.Flip Flops: RS Flip-Flops (only NOR gate latch, NAND gate latch), Gated Flip-Flops,Edge-Triggered RS Flip-Flop, Edge-Triggered D Flip-Flop, Edge-Triggered J-K Flip-Flop, JK Master-slave Flip-Flops.

	2. Counters: Asynchronous Counters 3 –bit (Ignore IC Specification diagrams) Synchronous counter only mod 8, Decade Counters Mod 5 and Mod 10 3.Registers: Types of registers: SISO, SIPO, PISO, PIPO (in this chapter the teacher should make all IC-specific diagrams into general diagrams ie. Ignore <i>PINs and IC numbers</i>: concept with block diagram) References: 1.Principles of Electronics – V. K. Mehta and Rohit Mehta. (S. Chand & Company – Multi colour revised edition) 2.Digital Principles and Applications - Leach, Malvino, Saha (Tata McGraw Hill Education Pvt. Ltd., 6th Edition) Additional References: 3.Digital Principles and Applications - Leach, Malvino, Saha (Tata McGraw Hill Education Pvt. Ltd., 7th Edition, SPECIAL INDIAN EDITION) 4.Electronic Principles-7th-edition-by-Albert-Malvino- online free PDF coffee available 5.Electronic Principles (SIE) 7th Edition by Albert Malvino,David J. Bates		
1	Internal Continuous Assessment: 40% (20 marks) Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3) Semester End Examination: 60% (30 marks) paper pattern attached		
	Format of Question Paper: 30 Marks Duration: ONE Hour <table border="1" data-bbox="180 1251 1451 1759"> <tr> <td data-bbox="180 1251 370 1759">Unit –I (15Marks)</td><td data-bbox="370 1251 1451 1759"> Q:1 A) Attempt any Two (5 Marks each) 10Marks i)Theory ii)Theory iii)Theory iv) Theory B) Attempt any One 05 Marks i)Theory/ Problem ii) Problem </td></tr> </table>	Unit –I (15Marks)	Q:1 A) Attempt any Two (5 Marks each) 10Marks i)Theory ii)Theory iii)Theory iv) Theory B) Attempt any One 05 Marks i)Theory/ Problem ii) Problem
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Unit -II
(15Marks)

Q:1 A) Attempt any **Two** (5 Marks each)

10Marks

i)Theory

ii)Theory

iii)Theory

iv) Theory

B) Attempt any **One**

05 Marks

i)Theory/ Problem

ii) Problem