



**Maharashtra State Board of
Secondary & Higher Secondary School, Pune**

Department of Electronics
Bifocal

Subject: Electronics (C2)

Std: Twelve

Faculty: Science

Syllabus

XII Electronics(Theory & Practical)

Theory Index

Sr. No.	Units / Topics	Weightage	
		Compulsory	With option
1	Number systems	07	15
2	Logic Gates	08	15
3	Semiconductor Families	05	10
4	Combinational Logic Circuits	10	20
5	Electronic Counters	10	20
6	A/D and D/A Converters	6	12
7	Computer Fundamentals	4	8
	Total	50	100

Syllabus

Sr. No.	Name of the Topic	Scope of Syllabus
1.	Number Systems	<ul style="list-style-type: none">• Decimal Number System• Binary Number System• Hexadecimal Number System• BCD code• Binary to Decimal conversion• Decimal to Binary conversion• Hex to Binary & Binary to Hex conversion• Hex to Decimal & Decimal to Hex conversion• ASCII code – Binary Arithmetic.
2.	Logic Gates	<ul style="list-style-type: none">• Study of Basic Gates(NOT, OR, AND)• Study of Universal Gates(NAND, NOR, EX-OR)• Boolean algebra• NAND, NOR as universal building blocks• Demorgan's Theorem• Half Adder• Full Adder
3.	Semiconductor Digital IC's	<ul style="list-style-type: none">• Introduction of logic families• Bipolar logic families• Unipolar logic families• Characteristics of digital IC's• TTL NAND Gate – CMOs , NAND ,NOT , NOR Gates• Open collector TTL NOT Gate• Tristate concept• Tristate TTL NOT Gate

4.	Combinational Logic Circuits	<ul style="list-style-type: none"> • Multiplexer and their use in Combinational logic design • Combinational logic design using multiplexer • Demultiplexer and their use in Combinational logic design • Encoder • Priority Encoder • Decoder and drivers for display devices
5.	Electronic Counters	<ul style="list-style-type: none"> • SR Flip Flop & Clocked SR Flip Flop • D Flip Flop • T Flip Flop • JK Flip Flop • Edge Triggered Flip Flop • Master Slave concept • Ripple or Asynchronous Counters • Decade Counters • Down Counters • Ring Counters • Shift Registers
6.	A/D and D/A Converters	<ul style="list-style-type: none"> • Introduction – Digital to Analog converter • Weighted Resistor Ladder • R- 2R Ladder • Analog to Digital converter • Counter type ADC • Successive Approximation ADC
7.	Computer Fundamentals	<ul style="list-style-type: none"> • Block diagram of Computer • Concept of Bus • Study of Input Output devices • Study of Memory Devices • Specifications of PCs.

Practicals

Sr.No.	Practical's Name
1.	Logic Gate - I
2.	Logic Gate - II
3.	Demorgan's Theorem
4.	EX – OR as controlled inverter
5.	Implementation of logic equation
6.	RS Flip-Flop(using NAND/NOR)
7.	Decoder using IC 7447
8.	Full Adder
9.	Half Adder
10.	4 bit adder using IC 7483
11.	Decade Counter
12.	R-2R ladder type D/A Converter
13.	Multiplexer/De - Multiplexer