

PDEA'S

Mamasaheb Mohol College, Paud Road, Pune – 38

Electronics Department

F. Y. B. Sc. Electronics of B. Sc. (Computer Science) CBCS 2019-20

Course Name: SEMESTER I, PAPER II- ELC 112: Principles of Digital Electronics (2 Credits, 36 lectures)

After completion of this course the students will be able to

Course Outcome #	Course Outcome
CO 112.1	to perform number system and code inter conversion
CO 112.2	to Learn logic gates and combinational circuits
CO 112.3	to apply laws and theorems for digital circuit minimization
CO 112.4	to draw logic diagram, truth tables and explain working of logic circuits.

Sr.No.	Chapter	Course Specific Outcomes	Teaching Methodology	Reference
1	Number Systems and Digital codes (10 L) Introduction to Decimal, Binary and Hexadecimal number systems and their inter-conversions, binary addition and binary subtraction using 2's complement, Binary Coded Decimal number, Gray Codes, Gray to Binary and Binary to Gray conversion, Alphanumeric representation in ASCII codes.	The students will be able to • Know significance of various number systems and codes • capable of interconversion among different number systems and codes • learn different data types of computer	Lecture method, Problem solving sessions, Peer Learning	Digital Fundamentals: Floyd T.M Pearson Education
2	Logic gates and Boolean Algebra (14L) Logic gates (NOT, AND, OR, NAND, NOR, XOR gate) with their symbol, Boolean equation and truth table, Universal gates	Students will be able to • draw symbol and truth tables of logic gates • simplify logic circuits using	Lecture method , problem solving sessions , Peer learning	1.Digital Fundamentals: Floyd T.M., Jain R.P., Pearson Education

	Introduction of CMOS and TTL logic families, Parameters like voltage levels, propagation delay, noise margin, fan in, fan out, power dissipation (TTL NAND, inverter, CMOS gates etc. not expected) Rules and laws of Boolean algebra, De Morgan's theorem, simplification of Logic equations using Boolean algebra rules, Min terms, Max terms, Boolean expression in SOP and POS form, conversion of SOP/POS expression to its standard SOP/POS form Introduction to Karnaugh Map, problems based on SOP (upto 4 variables), digital designing using K Map for: Gray to Binary and Binary to Gray conversion,	Boolean algebra laws • simplify logic circuits using K-maps • draw logic diagrams from Boolean expressions • design code converters		2. Digital Electronics: Jain R.P., Tata McGraw Hill
3	Combinational Circuits (12 L) Half adder and full adder, 4-Bit Universal adder/Subtractor, applications of Ex-OR gates as parity checker and generator, study of Multiplexer (4:1) and Demultiplexer (1:4), Encoders - Decimal/BCD to binary, 3X4 matrix keyboard encoder, priority encoder, Decoder-BCD to seven segment decoder, IC 74138 and IC 7447, Digital comparator,	Students will be able to • draw logic diagram and truth tables of combinational circuits. • Explain working of combinational circuits • Significance of parity • Design parity checker and generator	Lecture method , Use of ICT, Animations	Digital Principles and Applications: Malvino Leach, Tata McGraw-Hill

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