

Digital Logic Design and Application [DLDA]

S.E. Sem. III [CMPN]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs	100
Practical and Oral Exam	–	–
Oral	–	–
Term Work	–	25

SYLLABUS

1. Number Systems

Decimal, Binary, Octal and Hexadecimal number system and conversion. Number system's application e.g. shaft encoding, Binary weighted codes, Signed number binary order, 1's and 2's complement codes, All number system's arithmetic.

Boolean Algebra

Binary logic functions, Boolean laws, Truth tables, Associative and distributive properties, Demorgan's Theorem, Realization of switching functions using logic gates.

2. Combinational Logic

Switching equations, Canonical logic forms, Sum of product and Product of sum, karnaugh maps, two, three and four variable Karnaugh graph. Simplification of expression Quine-McCluskey minimization techniques, Mixed logic combinational circuits, Multiple output functions.

3. Analysis and Design of Combinational Logic

Introduction of combinational circuits, Multiplexer and demultiplexer, Multiplexers as function generator, Binary adder, Subtractor, BCD adder, Binary comparator with physical applications. Arithmetic and logic units, Design of combinational circuits using statements.

4. Sequential Logic

Sequential circuits, Flip flop conversions, clocked and edge triggered flip flops timing specifications, Timing analysis, state diagrams and tables, transition tables, Excitation table and equations, Examples using flip flops.

5. Sequential Circuits

Simple synchronous and asynchronous sequential circuit analysis, Different types of counters asynchronous and synchronous, Counter Design with state equations, Registers, Different types of shift registers, Construction of stage diagram and counter design.

6. Digital Integrated Circuits

Digital circuit logic levels. Propagation delay times. Power dissipation. Fan out and fan in. Noise margin for popular logic families. TTL, TTL sub families. CMOS and their performance comparison (Numericals expected).

References :

1. Modern Digital Electronics (*R. P. Jain*) – Tata McGraw Hill
2. Digital Design Principles and Practices (*John F. Wakerly*) Pearson Education, Russia.
3. Digital Logic and computer Design.(M. Morris Mano) – PHI.
4. Digital Logic (*John M. Yarbrough*) – Thomson Learning.
5. Digital Circuits and Logic Design (*Samuel Lee*) – PHI.
6. Fundamentals of Logic Design (*Charles H. Roth*) – (4th Edition) Junior Jaico Book.

