**PULSE, DIGITAL & INTEGRATED CIRCUITS**

**UNIT I: Linear wave shaping:**

High pass, low pass RC circuits, their response for sinusoidal, step, pulse, square

and ramp inputs. RC network as differentiator and integrator, attenuators, RL and RLC circuits

and their response for step input.

**UNIT II: Non-linear wave shaping:**

Diode clippers, Transistor clippers, clipping at two independent levels, Transfer

chracteristics of clippers, Emitter coupled clipper, Comparators,Applications of voltagecomparat

ors, clamping operation,Clamping circuits using diode with different inputs, Clamping circuit

theorem, practical clamping circuits, Transfer characteristics of clampers. Transistor as a switch,

Design of transistor switch, transistor-switching times.

**UNIT III: Multi-vibrators:**

Design and Analysis of Bistable, Monostable, Astable Multivibrators and Schmitt trigger using

transistors,

**Time base generators**: General features of a time base signal, Speed, transmission and

displacement errors. Analysis and Design of Sweep circuits using UJT and SCR.

**UNIT IV:**

Manufacturer’s designations for integrated circuits, Integrated circuit package types, Pin

identifications and temperature ranges, IC characteristics, Logic Families: DTL, TTL logic

family, TTL series, output configuration: Open collector, Totem pole, Tri state logic. ECL logic

Family

**UNIT V:**

MOS logic Family (PMOS and NMOS), CMOS logic family and characteristics, CMOS

transmission gate (bilateral switch) and its applications, CMOS open drain and high impedance

output, CMOS inverter, NAND and NOR gates, Interfacing CMOS and TTL, Comparison of

TTL, CMOS and ECL logic families.

**Suggested Readings**

1. J. Millman, H. Taub and S Rao, **Pulse, Digital and Switching Waveforms**, 3rd edition,

McGraw-Hill, 2014.

2. David A. Bell, **Pulse, Switching and Digital Circuits**, 5th edition, Oxford University

Press, 2015.

3. R. P Jain, **Modern Digital Electronics***,*4th ed., McGraw Hill Education (India)