PULSE & DIGITAL CIRCUITS

UNIT-I

Linear Wave Shaping: High pass, low pass RC circuits-response to sinusoidal, step, pulse,square and ramp inputs. RC circuit as differentiator and integrator.

Attenuators: Basic attenuator circuit and compensated attenuator circuit.

Switching characteristics of devices: Diode as a switch, transistor as a switch-transistor at cutoff, the reverse collector saturation current I_{CBO} , Its variation with the junction temperature. The transistor switch in saturation. Design of transistor switch.

UNIT-II

Non linear wave shaping: Diode clippers, Transistor clipper, clippers at two independent levels-transfer characteristics of clippers-emitter coupled clipper, clamping operation, diode clamping circuits with source resistance and diode resistance -transient and steady state response for a square wave input, clamping circuit theorem-practical clamping circuit.

UNIT-III

Multi vibrators: Bistable multi vibrators:

A basic binary circtuit-explanation. Fixed-bias transistor binary,self-biased transistor binary, binary with commutating capacitors-analysis.Non saturated binary–symmetrical triggering, schmitttrigger circuit-emmitter coupled binary circuit.

Monostable multi vibrator:

Basic circuit-collector coupled monostable multivibrator- emitter coupled monostable multivibrator-triggering of monostable multivibrator.

Astable multi vibrator:

The Astable collector coupled multivibrator, the Astable emitter coupled multivibrator.

UNIT-IV

Digital logic circuits: Introduction, positive and negative logic, Diode OR gate, Diode AND gate, An inverter circuit with transistor, DTL, TTL, ECL, AOI logic, NMOS logic, PMOS logic, CMOS logic-analysis and problem solving.

NIT-V

Time base generators:

Voltage time base generators-Introduction, definitions of sweep speed error, displacement error, transmission error, various methods of generating time- base waveforms, UJT time base generator, transistor constant current sweep.

Miller time base generators: General considerations, The miller sweep-general considerations of bootstrap time base generator-basic principles, transistor bootstrap time base generator.

UNIT-VI

Synchronization and frequency division:

Pulse synchronization of relaxation devices, frequency division of the sweep circuit-synchronization of Astable multi, Monostable multivibrator, synchronization of sweep circuit with symmetrical signals-sine wave frequency division with a sweep circuit.

Sampling Gates: Basic operating principle, Unidirectional diode gate circuits, bi-directional gates using transistors. A bidirectional diode gate, Four- diode gate.