PET5J008 ADVANCED ANALOG ELECTRONIC CIRCUITS(3-1-0)

MODULE-I

1. **Active Filters** :Active Filters, Frequency response of Major Active filters, First order low-pass Butterworth filter: Filter Design, Frequency Scaling, Second-order low-pass Butterworth filter: First-order high-pass Butterworth filter, Second-order high-pass Butterworth filter, Band-pass filters: Wide band-pass Filter, Narrow Band-Pass Filter, Band-reject filters: Wide Band-Reject Filter, Narrow Band-Reject Filter, All-Pass filter.
2. **Oscillators:** Oscillators: Oscillator Principles, Oscillator Types, Quadrature Oscillator, Saw tooth wave generator, Voltage-controlled oscillator.
3. **Comparators:** Comparators: basic comparator, zero-crossing detector, Schmitt trigger, comparator characteristics, limitations of Op-Amp as comparators, voltage limiters.

MODULE-II

4. **BistableMultivibrator:** BistableMultivibrator, fixed-bias bistable multi vibrator, Loading, self-biased transistor binary, commutating capacitors, Triggering the binary, Unsymmetrical Triggering of the bistablemultivibrator, Triggering Un symmetrically through a Unilateral Device, Triggering, Triggering of a Bistable Multi Symmetrically without the Use of Auxiliary Symmetrical Diodes, Schmitt Trigger Circuit (Emitter-coupled BistableMultivibrator
5. **Monostable and AstableMultivibrator:** MonostableMultivibrator, Gate Width of a Collector-Coupled MonostableMultivibrator, Waveforms of the Collector-Coupled MonostableMultivibrator, Emitter-Coupled MonostableMultivibrator, Triggering of the MonostableMultivibrator. Astable Collector-Coupled Multivibrator, Emitter-coupled Astablemultivibrator.
6. **Wideband amplifiers**: Wideband amplifiers: The Hybrid-π, High-frequency, Small-signal, Common-emitter Model, RC-Coupled Amplifier, Frequency Response of a Transistor Stage-The Short-Circuit Current Gain, Current Gain with Resistive Load, Transistor Amplifier Response taking Source Impedance into Account, Transient Response of a Transistor Stage.

MODULE-III

7. **Negative Resistance Switching Devices:** Voltage Controllable Negative resistance devices, Tunnel Diode operation and characteristics, MonostableAstable, Bistable circuits using tunnel diode, Voltage controlled Negative Resistance Switching Circuits.
8. **Voltage and Current Time Base Generators:** Time-Base Generators, General features of a Time-base signal, Methods of generating a voltage time-base waveform,

Exponential sweep circuit, Miller and bootstrap time base generators-Basic principles, Transistor miller time base generator, Transistor bootstrap time base generator, Current Time-Base Generators, A Simple Current sweep, Linearity Correction through adjustment of driving waveform, Transistor current time base generator.

MODULE-IV

9. **Specialized IC Applications:** IC 555 Timer: IC 555 Timer as a MonostableMultivibrator and its applications, IC 555 Timer as AstableMultivibrator and its applications. Phase Locked Loop: Operating principle of PLL, Phase detectors, Exclusive-OR phase detector, Monolithic phase detector, Instrumentation Amplifier and its applications.

Additional Module (Terminal Examination-Internal)

10. Cascaded CE Transistor Stages, Rise-time Response of Cascaded Stages, Shunt Compensation of a TransistorStage in a Cascade, Rise Time of Cascaded Compensated Stages, Low frequency Compensation.

Text Books

1. Pulse, Digital and switching Waveforms, Jacob Millman, Herbert Taub and MS PrakashRao, TMH Publication, Second Edition.
2. Pulse, Switching and Digital Circuits,David A. Bell, Oxford University Press, Fifth Edition.
3. OP-Amps and Linear Integrated Circuits, Ramakant A. Gayakwad, PHI Publication.
4. Pulse & Digital Circuits, K.VenkataRao, K Rama Sudha& G ManmadhaRao, Pearson Education, 2010.

Reference Books

1. OP-Amps and Linear Integrated Circuits, Robert F. Coughlin, Frederick F. Driscoll, Pearson Education Publication.
2. Pulse and Digital Circuits, A. Anand Kumar, PHI.