LINEAR ICS AND COMMUNICATION LAB

As per Choice Based Credit System (CBCS) scheme]

SEMESTER – IV (EC/TC)

Laboratory Code	15ECL48	IA Marks	20
Number of Lecture Hours/Week	01Hr Tutorial (Instructions) + 02 Hours Laboratory	Exam Marks	80
RBT Level	L1, L2, L3	Exam Hours	03

CREDITS – 02

Course objectives: This laboratory course enables students to:

- Design, Demonstrate and Analyze instrumentation amplifier, filters, DAC, adder, differentiator and integrator circuits, using op-amp.
- Design, Demonstrate and Analyze multivibrators and oscillator circuits using Op-amp
- Design, Demonstrate and Analyze analog systems for AM, FM and Mixer operations.
- Design, Demonstrate and Analyze balance modulation and frequency synthesis.
- Demonstrate and Analyze pulse sampling and flat top sampling.

Laboratory Experiments:

1. Design an instrumentation amplifier of a differential mode gain of 'A' using three amplifiers.
2. Design of RC Phase shift and Wien's bridge oscillators using Op-amp.
3. Design active second order Butterworth low pass and high pass filters.
4. Design 4 bit R – 2R Op-Amp Digital to Analog Converter (i) using 4 bit binary input from toggle switches and (ii) by generating digital inputs using mod-16 counter.
5. Design Adder, Integrator and Differentiator using Op-Amp.
6. Design of Monostable and Astable Multivibrator using 555 Timer.
7. Demonstrate Pulse sampling, flat top sampling and reconstruction.
8. Amplitude modulation using transistor/FET (Generation and detection).
9. Frequency modulation using IC 8038/2206 and demodulation.
10. Design BJT/FET Mixer.
11. DSBSC generation using Balance Modulator IC 1496/1596.
12. Frequency synthesis using PLL.

Course Outcomes: This laboratory course enables students to:

- Illustrate the pulse and flat top sampling techniques using basic circuits.
- Demonstrate addition and integration using linear ICs, and 555 timer operations to generate signals/pulses.
- Demonstrate AM and FM operations and frequency synthesis.
- Design and illustrate the operation of instrumentation amplifier, LPF, HPF, DAC and oscillators using linear IC.

Conduct of Practical Examination:

- All laboratory experiments are to be included for practical examination.
- Students are allowed to pick one experiment from the lot.
- Change of experiment is allowed only once and Marks allotted to the procedure part to be made zero.

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