

## Faculty of Science

**B.Sc (Electronics) II-Year, CBCS-IV Semester Examinations, May/June 2019****PAPER: LINEAR INTEGRATED CIRCUITS AND BASICS OF COMMUNICATION**

Time: 3 Hours

Max Marks: 80

**Section-A**

I. Answer any FIVE of the following questions. (5x4=20 Marks)

1. Explain input resistance, output resistance, offset voltage and bias current of op-amp.
2. If an op-amp has an output signal of 10 V with slew rate of 2.0 V/ $\mu$ s. Calculate the power band width in amplifier.
3. Describe the logarithmic amplifier.
4. Describe Timer 555 circuit.
5. Draw amplitude modulated forms for : (a) 0% (b) 50% (c) 100 % and (d) 150% .
6. Explain about the Balanced modulator.
7. Write an expression for FM wave. Explain modulation index and deviation ratio.
8. Explain the terms PAM and PCM.

**Section-B**

II. Answer the following questions. (4x15=60 Marks)

9. (a) Draw the circuit diagram of an Emitter coupled differential amplifier and explain its working. Explain the CMRR and slew rate of OP-Amp.

(OR)

- (b) Explain OP-Amp as voltage follower and comparator.

- 10.(a) Solve the differential equation  $\frac{d^2x(t)}{dx} + 2 \frac{dx(t)}{dx} + 3 x(t) = 4$  using electronic analogue computation.

(OR)

- (b) Draw the circuit diagram of an Astable multivibrator using op-amp and describe its working with the help of waveforms. Derive an expression for its frequency of oscillations.

- 11.(a) Explain AM. Show that AM wave can be represented by a carrier and side frequencies.

(OR)

- (b) What are the essentials in demodulation? Draw the circuit diagram of a diode detector and explain its working.

- 12.(a) Give the theory of FM and explain the frequency spectrum of it.

(OR)

- (b) Draw the block diagram of FM Radio Receiver and explain its working.

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