

Reg. No. :

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 31052

B.E. / B.Tech. DEGREE EXAMINATION, OCTOBER 2014.

Third Semester

Electronics and Instrumentation Engineering

01UEI302 - LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Give the classifications of ICs according to level of integration.
2. On what factors does the threshold voltage depend?
3. Define common - mode rejection.
4. How do the open - loop voltage gain and the closed loop voltage gain of an op - amp differ?
5. How the gain of basic instrumentation amplifier is determined?
6. Name any two types of oscillators.
7. Draw the circuit of basic 555 timer used in monostable(one shot) mode.
8. How does a PLL track the incoming frequency?
9. Calculate the required input angle voltage and resultant output voltage for angles of $(a) \pm 45^\circ$.
10. What is meant by optocoupler?

PART - B (5 x 16 = 80 Marks)

11. (a) Explain the classification of ICs according to their method of fabrication. (16)

Or

(b) Discuss the steps encompassed by the photolithographic process. Illustrate. (16)

12. (a) Draw a simplified version of the op - amp input circuitry and discuss its input bias currents. (16)

Or

(b) A square wave with negligible rise time and peak - to - peak amplitude of 500mV must be amplified to a peak - to - peak amplitude of 3 V with a rise time of 4 μ s or less.

(a) Can a 741 be used?

(b) Can a 318 be used?

(c) What is the rise time? (16)

13. (a) Draw the circuit symbol for instrumentation amplifier and explain with suitable examples. (16)

Or

(b) Describe in detail and explain the operation of an inverting Schmitt trigger. (16)

14. (a) Draw the equivalent circuit for the timing circuit portion of the 555 monostable circuit and analyze the circuit. (16)

Or

(b) With the help of a neat sketch, explain PLL demodulation of an FM signal. (16)

15. (a) Illustrate and explain a series regulator with parallel - connected pass transistors for higher - current operation. (16)

Or

(b) Describe the operation of LM317 three - terminal adjustable positive voltage regulator. (16)