

Reg. No. :

**Question Paper Code : 27208**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Third Semester

Electrical and Electronics Engineering

EE 6303 — LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

(Common to Electronics and Instrumentation Engineering and Instrumentation and Control Engineering)

(Regulations 2013)

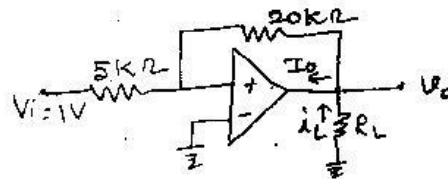
Time : Three hours

Maximum : 100 marks

Answer ALL questions.

**PART A — (10 × 2 = 20 marks)**

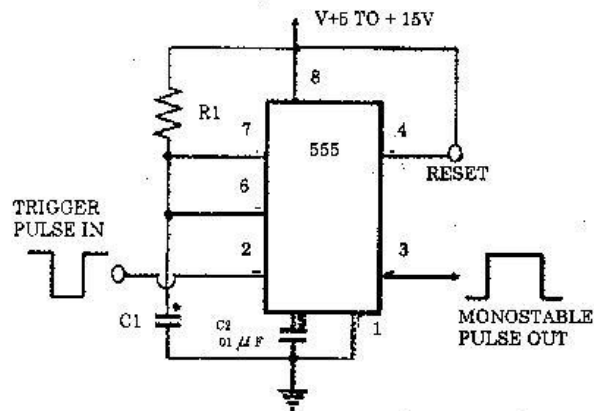
1. Classify ICs on the basis of application, device used and chip complexity.
2. Mention different available IC package configurations.
3. What are the ideal characteristics of an OP — AMP?
- 4.



In circuit shown in above figure, calculate  $V_o$ ,  $i_L$ , load current  $i_L$  and output current  $i_o$ .

5. Draw the circuit of a log amplifier using two op-amps.
6. Calculate the value of the LSB, MSB and full scale output for an 8-bit DAC for the 0 to 12V range.

7. In the Monostable multivibrator of below figure circuit  $R_1 = 100K\Omega$  and the time delay  $T = 100mS$ . Calculate the value of  $C_1$ .



8. Define capture range and Lock-in range.
9. Define Line regulation and Load regulation.
10. What is the purpose of using an external pass transistor with an IC voltage regulator.

PART B -- (5 × 16 = 80 marks)

11. (a) Explain the various steps involved in fabrication of a typical transistor into monolithic ICs. (16)

Or

- (b) What is thin and thick film technology? Explain various methods used for deposition of thin film technology. (16)

12. (a) (i) What is Slew rate? List the causes of the Slew rate and explain its significance in applications. (10)
- (ii) Briefly explain the methods used for frequency compensation. (6)

Or

- (b) (i) Draw and explain the operation of a current to voltage converter. (8)
- (ii) What are the limitations of an ordinary op-amp differentiator? Draw the circuit of a practical differentiator that will eliminate these limitations. (8)

13. (a) (i) Design a second order Butterworth Low pass filter having upper cut-off frequency of 1 kHz. (12)  
(ii) Explain how to measure the phase difference between two signals. (4)

Or

- (b) (i) Draw a sample and hold circuit and explain its operation. (8)  
(ii) Design a circuit of a clipper which will clip the input signal below a reference voltage. (8)
14. (a) (i) Draw and explain the functional diagram of 555 timer. (10)  
(ii) Discuss the operation of a FSK generator using 555 Timer. (6)

Or

- (b) Draw the block diagram of a VCO and explain its operation. (16)
15. (a) (i) Draw and explain the functional diagram of 723 IC regulator. (8)  
(ii) Explain fold back characteristics of 723 IC regulator. (8)

Or

- (b) (i) Draw the circuit diagram of a LM 380 power audio amplifier and explain its operation. (12)  
(ii) What are the applications of LM 380 power amplifier? (4)