



B.E / B.Tech (Part time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY2014

Department of Electronics and Communication Engineering

Third Semester

PTEC8304-Operational Amplifier and Analog Integrated circuits

(Regulation R2013.)

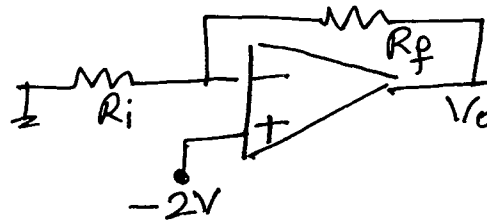
Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Define slew rate.
2. How opamp can be used as Voltage to Current Converter.
3. What is the output voltage of the circuit shown $R_i = 1k$, $R_f = 2.2k$



4. Give one application of analog multiplier in communication field.
5. Define CMRR of differential amplifier.
6. How PLL can be used for frequency translation.
7. Define Resolution of D/A converter with an example.
8. Draw a block diagram of F to V converter.
9. Design the value of R used in mono stable multivibrator using timer IC to produce a pulse of 10 seconds with $C = 0.1\mu f$.
10. What is opto coupler IC.

Part – B (5 x 16 = 80 marks)

11.i) Draw the internal diagram of Timer IC. Discuss the operation of Monostable Multivibrator using the above IC in stable and unstable state. Derive for its ON time. Draw the output and capacitor waveforms. (10)

ii) Draw an inverting integrator using switched capacitor and write the expression for its time constant. (6)

12a). Describe the operation of dual slope A/D converter.

(OR)

b.i) Briefly expression sample and Hold circuit. (6)

ii) With circuits describe the function of any two types of analog switches. (6)

iii) Draw the circuit of weighted resistor 4 bit DAC and write the expression for the output voltage for the digital input 1101 (4)

13 a) With internal block explain in detail VCO IC.

(OR)

b) Draw and explain four quadrant analog Multiplier.

14.a.i) Draw a Widlar current source and derive for its output current (8)

ii) Explain supply and temperature independent biasing with circuits (8)

(OR)

b) Draw a difference amplifier with active load and derive for A_d and A_c and hence CMRR.

15 a.i) How opamp can be used as Log amplifier (6)

ii) Design a second order Butterworth Low pass Filter. Using opamp to have cut off frequency of 5 KHz. Assume $C = 0.1 \mu\text{f}$. Draw the designed circuit (6)

iii). Draw and explain Square wave generator using opamp. Write the expression for the frequency. (4)

(OR)

b). Draw and explain how opamp can be used as instrumental amplifier.