UNIT-3 : Operational amplifiers [CO3]

Assignment-03

Note : Write answers for any FIVE questions

Q1. Explain gain in operational amplifier? Explain the significance of CMRR. [KL2]

Q2. Explain procedure of using operational amplifier as inverting and non-inverting amplifier? [KL2]

Q3. Derive expression for output in unit follower and summing amplifier circuits using opamp. [KL3]

Q4. Derive expression for integrator and differentiator circuits using opamp. [KL3]

Q5. The slew rate of an Op-Amp is 6V/μs when close loop gain is unity. The amplified output signal is observed to be a pure sinusoid, Vout=VmaxCosωt provided the frequency of this signal does not exceed a certain limit. Find the value of this limiting frequency before output signal is distorted by slew rate limit if (i) Vmax=1V (ii) Vmax=10V [KL4]

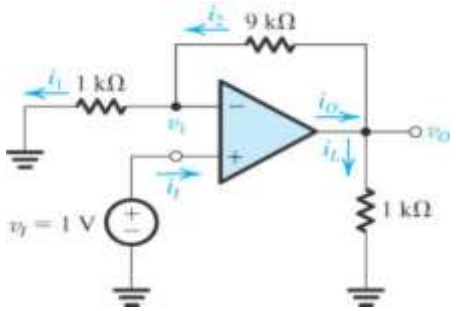
Q6. A square wave of peak-to-peak amplitude of 750mV has to be amplified to peak to peak amplitude of 3.8V, with a rise time of 4.5μs or less. Can IC Op-Amp be used? [KL3]

Q7. Compare active integrator and active differentiator [KL4]

Q8. Design a circuit with operational amplifier to produce V_o given by [KL6]

$$V_o = (V_{s1} + V_{s3}) - (V_{s2} + V_{s4})$$

Q9. Assume Ideal Op Amp and Find : i_1, v_1, i_I, i_2, V_0, i_L, i_0, V_0/V_I, i_L/i_I , P_0/P_1



Q10. Assume ideal Op Amp and find the relationship between the output voltage and the four input voltages