Sheet (2) – supplementary

1. What are the benefits of negative feedback in operational amplifier?

Stable controlled voltage gain – control of impedances – wider BW

2. Why is necessary to reduce the gain of an op-amp from its open-loop value?

A_{OL} is so higher that a very small input will drive op-amp into saturation.

3. What is the main purpose of negative feedback?

Is to stabilize gain

4. The closed loop voltage gain of each of the op-amp configuration discussed is dependent on the internal open-loop voltage gain of the op-amp (True or False)?

False

5. The attenuation of negative feedback circuit of non-inverting op-amp configuration is 0.02, what is the closed loop gain?

Closed loop gain = 1/0.02=50

6. When the op-amp connected in a voltage follower configuration, does the input impedance increase or decrease?

increase

7. What are the two sources of dc output error voltage?

Input current and input offset voltage

8. How do you compensate for bias current in voltage follower?

Add a resistor in feedback path equal to the input source resistance

9. How do open loop gain differ from closed loop gain of op-amp

$A_{OL} > A_{CL}$, A_{OL} (without feed back), A_{CL} (with feedback)

10. Does the open loop gain increased or decreased with frequency above the critical frequency?

decreased

11. If the individual stage gains of op-amp are 20dB, 3dB, what is the total gain in dB?

A_{tot}=20dB+30dB=50dB

12. If the individual phase lags are -49°, -5.2^o, what is the total phase lags?

θ_{tot}= -49° +(-5.2^o) =-54.2^o

13. Is the closed loop gain always less than open loop gain?

Yes

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