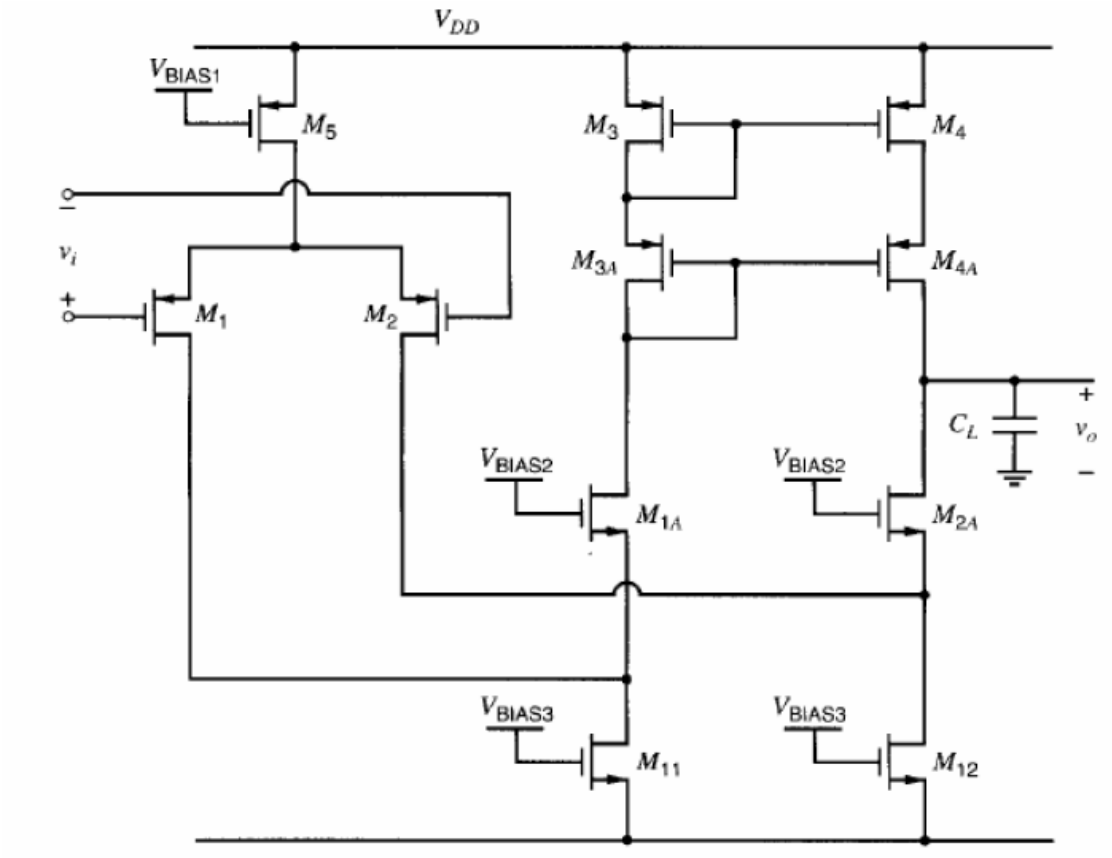
University of Tehran
ECE Department
Electronics II
CA #2
Single ended folded cascode Op amp

Due: 1387/3/6
23:59

In this project you are going to design a single ended folded cascade Op amp With the following configuration and specifications.



First simulate the circuit with the given values and report the results. Then design the circuit to obtain the desired specifications.

Lmin=.35um

M1	w = '250*lmin'	l = lmin
M2	w = '250*lmin'	l = lmin
M5	w = '115*lmin'	l = 'lmin'

M3 w = '200*lmin' l = 'lmin'
M4 w = '200*lmin' l = 'lmin'
M3a w = '100*lmin' l = lmin
M4a w = '100*lmin' l = lmin
M1a w = '200*lmin' l = lmin
M2a w = '200*lmin' l = lmin
M11 w = '180*lmin' l = 'lmin'
M12 w = '180*lmin' l = 'lmin'
vbias1 = 2.4
vbias2 = 1.12
vbias3 = 0 .75

Note : the two circuit sides must correspond each other , that means the same current and dimension for each corresponding pair.

Specifications:
1. dc gain > 60 dB
2. UGBW > 150 MHz
3. input common mode voltage = 1.65 V
4. output common mode must be between 1.6 V and 1.7 V
5. output voltage swing > 1.8 V
6. load capacitance =5 pf
7. power consumption < 5mW
8. Vdd=3.3
9. 0.35 CMOS technology

First of all do hand calculation to find significant parameters and their effects on required specifications. This is half of your work and makes design process straight forward .