

**Indian Institute of Technology, Delhi**  
**EEL 204: Analog Electronic Circuits**  
**Tutorial 10, April 20, 2011**

Assume all the MOS devices have  $C_{gs}=200$  fF,  $C_{sb}=150$  fF,  $C_{db}=100$  fF, and  $C_{gd}=50$  fF. Further assume that the devices are biased such that  $g_m = 1$  mS, and  $g_m r_{ds} = 20$ .

Compensate the circuits below for:

1. A phase margin of  $75^\circ$ , when  $C_L$  is 2 pF.
2. A phase margin of  $75^\circ$ , when  $C_L$  is 1 pF.
3. A phase margin of  $60^\circ$ , when  $C_L$  is 2 pF.
4. A phase margin of  $60^\circ$ , when  $C_L$  is 1 pF.

Find the unity-gain bandwidth of the amplifier in each case.

