Home Assignment #3
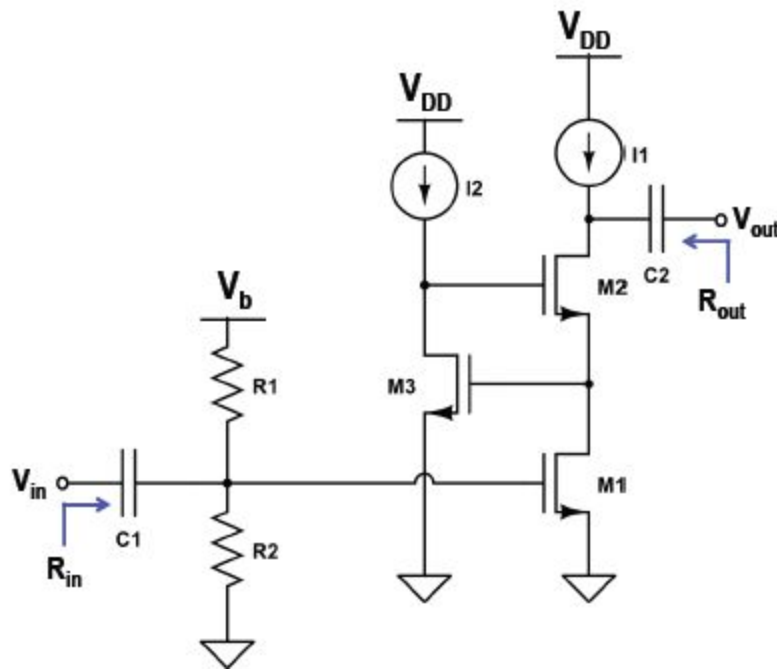
Deadline : 15/09/2016

1. Design an amplifier of **gain >6dB**.
   (Do any one design on ELDO and two on Cadence)
   a) Using Current source as load
   b) Using Current Mirror Application
   c) Using Diode Connected Load

2. Consider the following questions using the parameter value listed below. Assume all MOSFET share the same parameters except for the one specified. Ignore body-effect. Provide expressions for the input resistance Rin, output resistance Rout, and gain vout/vin for the amplifier in Fig. 1. Assume Vb biases all the transistors properly in saturation region. (Only theoretical Analysis needed)

Parameters :

L=0.8 um	R_1=10K
M_1 (W) = 16 um	R_2=20K
M_2(W) =8 um	I_1=1mA
$M_{3(}$W) =8 um	I_2=0.1 mA
t_{ox}=60e-10 m	V_{dd}=3.3 V
V_{th}=0.6 Volt	Oxide Relative Permittivity =3.9
Mobility of electrons =1400 cm²/v.s	lambda=0.2/volt