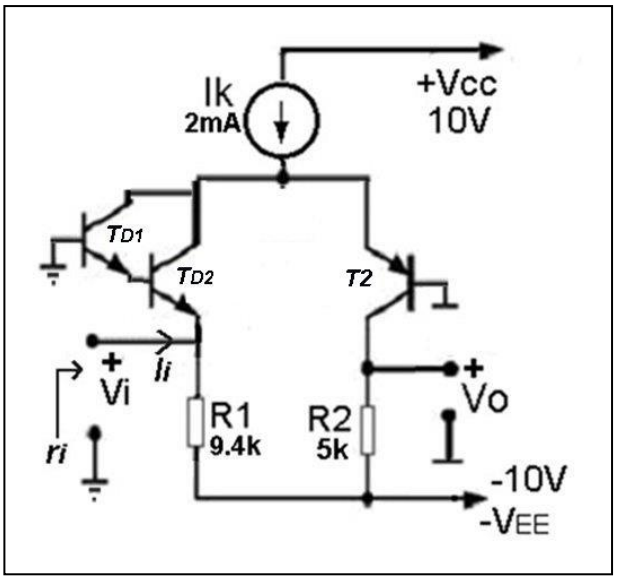
ELECTRONICS II	SUMMER-2020 MT-2	20.08.2020

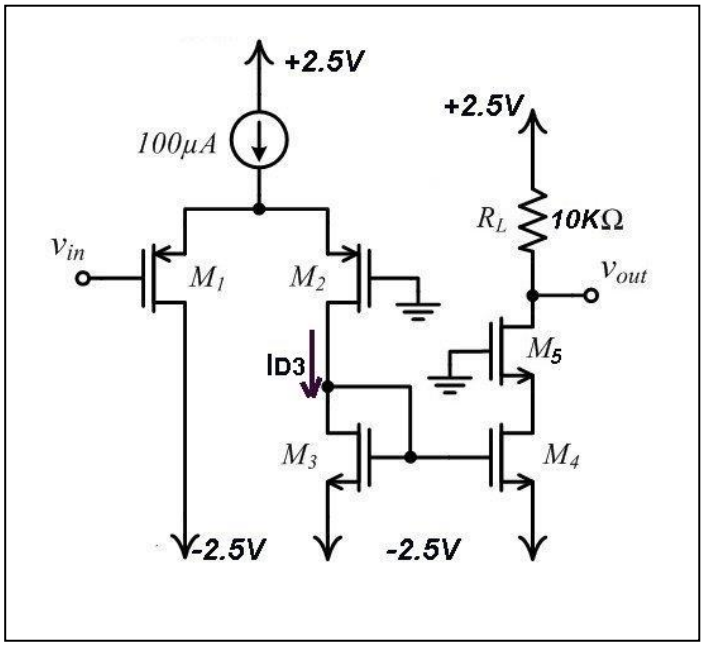
P1 For the transistors in the figure, β_F=200 , $|V_{BE}|$=0,6V,VT=25mV, VA=∞. **TD and T2 have the same collector current value in DC case.**



a) In ac case, find the input current value (Ii=?) for the input voltage value Vi=10mV.

b) Design a current mirror structure in place of the current source Ik=2mA.
(You can use the same transistors)

P2- For the MOS transistors in the Figure, $\beta_1=\beta_2=\beta_3$=0.4mA/V^2, $\beta_4=\beta_5$=0.8mA/V^2 and $|V_{TH1}|=|V_{TH2}|=V_{TH3}=V_{TH4}=V_{TH5}$=0.5V are given.



a) Find I_{DQ4} for Vin=0 in DC case.

b) Find **<u>İd3/Vin</u>** (ac trans-conductance gain between gate**1** and drain**3**).

c) Find ac gain (Vout/Vin) of the circuit.