

APJ Abdul Kalam Technological University
First Semester M.Tech Degree Examination December 2016
Ernakulam II Cluster

05EC6001 CMOS ANALOG DESIGN

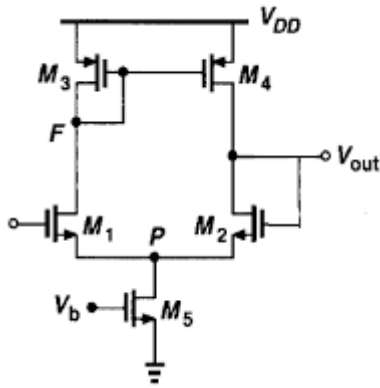
Duration: 3 Hours.

Max. Marks: 60

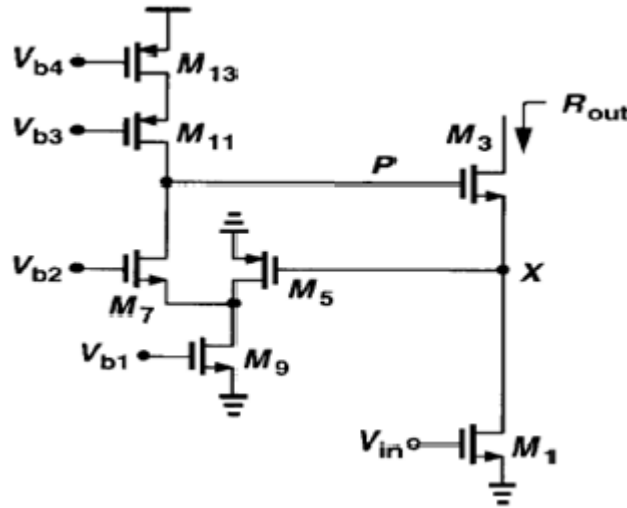
- 1) a) Draw and explain the equivalent circuit of MOS switch showing all the parasitic components. (4 Marks)
- b) Derive the output impedance of MOS current source. (4 Marks)
- c) With neat circuit diagram explain the working of band-gap voltage reference circuit. (4 Marks)
- 2) a) Derive the expression for voltage gain and input and output impedances of common gate amplifier circuit. (6 Marks)
- b) Derive the expression for voltage gain and output impedance of current mirror loaded differential amplifier (6 Marks)
- 3) a) Compare the voltage gain, input impedance, output impedance and input and output common mode levels of telescopic cascode, folded cascode and two stage op-amps (8 Marks)
- b) What is CMFB circuit? Explain different commonly employed sensing and corrections techniques. (10 Marks)

OR

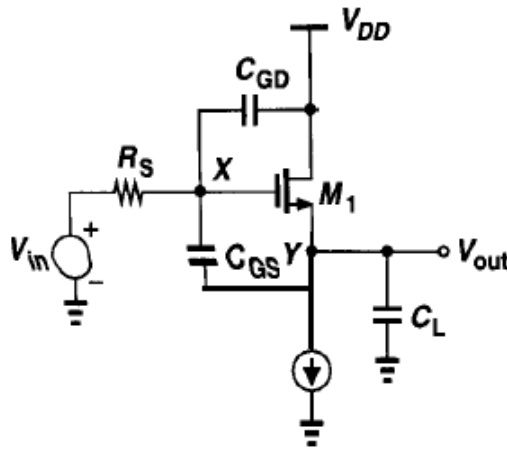
- 4) a) Calculate the input common mode voltage range and closed loop output impedance the unity gain buffer given below. Assume $V_{DD} = 3\text{ V}$, and for all transistors, $V_t = 0.7\text{ V}$ and $V_{OV} = 0.3\text{ V}$. (9 Marks)



b) Calculate the output impedance of the following circuit. (9 Marks)



5) a) Obtain the high frequency transfer function of the circuit given below. (12 Marks)



b) Explain how noise is represented in electronic circuits. (6 Marks)

OR

6) a) Derive the high frequency transfer function of common source amplifier. (10 Marks)

b) Explain how input referred noise is represented in a differential pair. (8 Marks)