Code No: 138AQ

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, December - 2020
ANALOG CMOS IC DESIGN
(Electronics and Communication Engineering)

Time: 2 Hours **Max.Marks:75**

Answer any Five Questions
All Questions Carry Equal Marks

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1. What are the parasitic capacitances of MOSFET and derive a small signal model that have an impact on the electrical behavior of the circuit and influence its electrical properties. Give a graphical overview of different operations involved in a typical photolithographic process. [15]

2. Derive an expression for g_m of an N-channel MOSFET operating in linear and saturation regions. Explain the significance of each parameter of it. [15]

3. What is Current Mirror? Explain the general properties of current mirrors with block diagram. [15]

4. Analysis and design the sub-block of MOS diode using floating resistor realization. [15]

5. What is the importance of cascode amplifier? Obtain the expression for voltage gain and output impedance. [15]

6. Explain how constant gain and stability is achieved in wide swing differential amplifier. [15]

7. Describe the operation of two-stage op-amps with balanced and unbalanced outputs and explain the methods by which the output impedance can be increased without adding more cascade devices. [15]

8.a) Explain about the discrete time comparator with a built-in threshold.
b) Explain about single-stage dominant pole comparator. [8+7]

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