Code No: I6803/R16

M. Tech. I Semester Regular/Supple Examinations, Jan/Feb -2018
CMOS ANALOG IC DESIGN
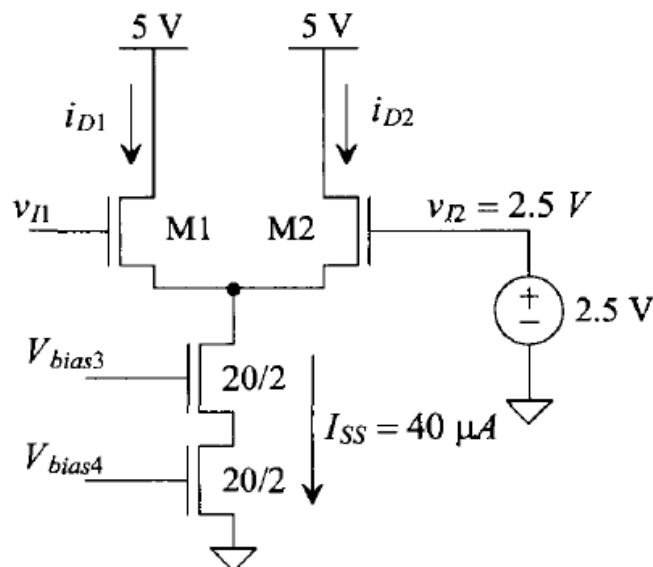### Common to VLSI&ES (68), ES&VLSI (48), VLSID &ES (77), ES &VLSID (81), VLSI (57), VLSID (72), VLSI System Design (61), VLSI & Micro Electronics (76)

Time: 3 Hours   **Max. Marks: 60**

Answer any FIVE Questions
All Questions Carry Equal Marks

1.	a	Write a brief note on various passive components that are available in CMOS technologies with relevant diagrams	8M
	b	With necessary schematics, explain the term Latch up in CMOS Technology	4M
2.	a	Draw the model for a non ideal switch and explain its parameters in detail	5M
	b	Draw and explain about a simple current mirror with Beta helper.	7M
3.	a	Draw and explain the circuit diagram for voltage reference with high sensitivity	5M
	b	Explain the Inverter DC characteristics and also give your inference on MOSFET channel length	7M
4.	a	With relevant expressions explain the terms maximum and minimum differential i/p voltage	6M
	b		6M

Estimate the maximum and minimum voltage on the gate of Ml in Fig. that ensures that neither Ml or M2 shut off.(Assume the necessary data)

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5.   With the necessary schematics explain the following terms
    i)   Simple folded cascode   4M
    ii) Folded cascode with biasing   4M
    iii) Folded cascode with nMOS input   4M

6.   a   With a schematic explain about operational-amplifier with its equivalent circuit   4M
    b   Define and explain the following terms   8M
        i)   Common-Mode Input Range
        ii) Common-Mode Rejection Ratio

7.   a   Draw the schematic for a Folded-cascode op-amp with class AB output buffer and explain its operation   6M
    b   Draw the Block diagram of a spectrum analyzer and explain the procedure to measure the spectral content of a signal   6M

8.   a   Write a note on characterization of comparator   5M
    b   With relevant schematics explain about discrete-time comparators.   7M

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