



Reg. No. :

Name :

VI Semester B.Tech. Degree (Reg./Supple./Imp. – Including Part Time)

Examination, May 2014

(2007 Admn. Onwards)

PT 2K6/2K6EC 606 (F) : ANALOG MOS CIRCUITS

Time : 3 Hours

Max. Marks : 100

Instructions : 1) Answer **all** questions in Part – A.

2) Answer **one** question from **each** Module in Part – B.

PART – A

- I. a) Explain the physical structure of n-channel enhancement type MOSFET. 5
- b) Describe MOS resistors and resistor circuits. 5
- c) Define MOS current steering circuits. 5
- d) Define Coscoding. 5
- e) Explain the basic gain cell in IC amplifier. Define intrinsic gain. 5
- f) Explain CMRR. 5
- g) Explain level shifting in multiplexes. 5
- h) Write short note on clocked comparators. 5

(8×5=40)

P.T.O.



PART - B

II. a) Explain the formation of a channel for current flow in n-channel MOSFET. 15

OR

b) Consider a process technology for which $L_{\min} = 0.4 \mu\text{m}$, $t_{\text{ox}} = 8 \text{ nm}$, $Y_n = 450 \text{ cm}^2/\text{V}\cdot\text{s}$ and $V_t = 0.7 \text{ V}$.

a) Find C_{ox} and process conductance parameter (K_n^{-1}).

b) For a MOSFET with $W/L = 8 \mu\text{m}$ calculate the values of V_{GS} and V_{DSmin} needed to operate the transducer in saturation region with a DC current $I_D = 100 \mu\text{A}$. 15

c) For the device in (b) find the value of V_{GS} required to cause the device to operate as a 1000Ω resistor for very small V_{DS} .

III. a) Explain common source amplifier. Describe expression for characteristic parameters R_{in} , A_{VO} and R_{O} . 15

OR

b) Describe Wilson MOS mirror. 15

IV. a) Describe current-source loaded common source Amplifier. 15

OR

b) Describe small signal analysis of common Gut Amplifier with active loads. 15

V. a) Explain switched capacitor implementation of ladder filter. 15

OR

b) Explain CMOS comparator design. 15

(4×15=60)