

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER- II(New course)• EXAMINATION (Remedial) – WINTER- 2015

Subject Code:3725204

Date: 11/12/2015

Subject Name: Designing with Modelling & FPGA's

Time:2:30 pm to 5:00 pm

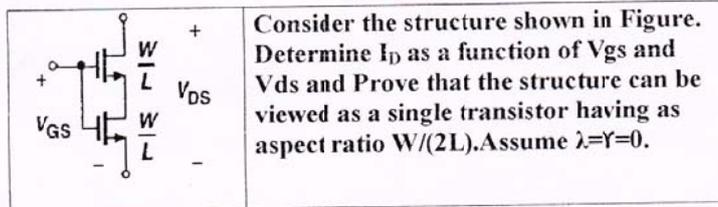
Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

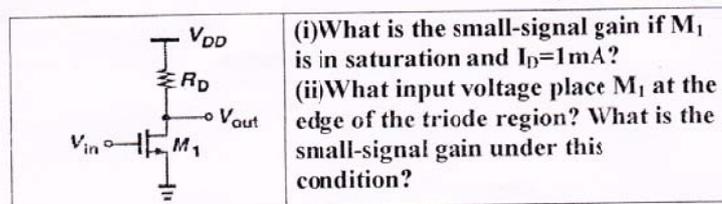
Q.1 (a) List all second order effects of MOSFET and discuss any two in detail. 07

(b) 07



Q.2 (a) What advantages of Source Follower make it more useful than Common Source stage? Drive expression of A_v (Voltage gain) for source follower and derive same with equivalent circuit (in case of with and without channel length modulation)? And also drive expression for R_{out} in case of Source Follower. 07

(b) In the circuit of common-source stage, assume $(W/L)_1=50/0.5, R_D=2k\Omega$ and $\lambda=0$. 07



OR

(b) In case differential pair, drive the expression for small- signal voltage gain? Plot the input-output characteristic of a differential pair as device width and the tail current vary and discussed. 07

Q.3 (a) Discuss basic cascode current mirrors. 07

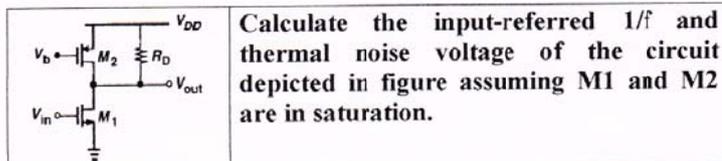
(b) What are types of feedback topologies? Briefly explain with 07

diagram.

OR

Q.3 (a) Explain the miller theorem and also discuss the significance of miller theorem. 07

(b) 07



Q.4 (a) Discuss Common Mode response for differential amplifier in detail. 07

(b) CMFB using triode devices suffers with limited output voltage swings, how can this issue resolved? 07

OR

Q.4 (a) What is clock Feed through? And what in Delay –locked loops in PLL. 07

(b) Discuss the operation of MOSFETS as switches (switched-capacitor)? 07

Q.5 (a) Draw and explain working of a circuit to generate PTAT current. 07

(b) Explain Switched-capacitor Integrator? 07

OR

Q.5 (a) What is Jitter? Explain for PLL. 07

(b) Write short note on any two (i) Binary weighted Resister (ii) R-2R Ladder (iii) Multiplier DAC & (iv) Non-Multiplier DAC 07
