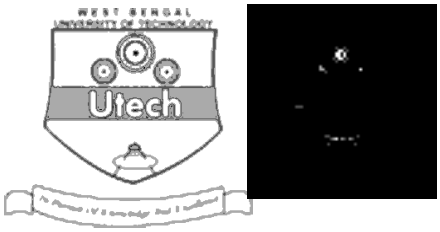
CS/M.TECH (ME/VLSI)/SEM-2/PGVLSI-201/09
ANALOG CIRCUITS & SYSTEMS (SEMESTER - 2)



1. ..... *Signature of Invigilator*

2. ..... *Signature of the Officer-in-Charge*

Reg. No. | | | | | | | | | | | | | | |

Roll No. of the Candidate | | | | | | | | | | | | | | |

CS/M.TECH (ME/VLSI)/SEM-2/PGVLSI-201/09
ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009
ANALOG CIRCUITS & SYSTEMS (SEMESTER - 2)

Time : 1 $\frac{1}{2}$ Hours] [Full Marks : 30

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. You have to answer the questions in the space provided marked 'Answer Sheet'. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

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FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

Question Number											***Total Marks***	***Examiner's Signature***
Marks Obtained												

.....

Head-Examiner/Co-Ordinator/Scrutineer

48003 (30/06)

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CS/M.TECH (MC & VLSI)/SEM-2/PGVLSI-201/09
ANALOG CIRCUITS & SYSTEMS
SEMESTER - 2

Time : 1 $\frac{1}{2}$ Hours] [Full Marks : 30

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Question No. 1 is compulsory and answer any *two* from the rest.

1. Answer very briefly any *five* of the following questions. 5 × 2

   i) What is the circuit theory interpretation of channel length modulation effect of a MOS transistor ?

   ii) What do you mean by body effect of a MOS transistor ?

   iii) What are the various capacitors associated with a MOS transistor ?

   iv) Explain how the output impedance of an electronic circuit can be reduced using negative feedback technique.

   v) How can a current mirror circuit acts as a current amplifier ?

   vi) What is the unity gain frequency of a MOSFET.

   vii) Explain what you mean by the term 'ac ground' as applied to electronic circuits.

2. Calculate I_D , V_{DS} and estimate the small signal resistance looking into the drain of the MOSFET in the following circuit. Assume $K^{'}$ = 120 μA/V ^{2} AND V_T = 0·8. 10

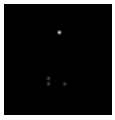

Fig. 1

3. i) Explain qualitatively what happens to V_{GS4} and V_{DS4} in the circuit shown in *Figure 2* as the the bias current is increased. 3

Fig. 2

ii) Calculate the values of I_D and V_{SG} in the following circuit shown in *Figure 3*. Assume K^{l} = 40 μA/V ^{2} and V_T = 0·9. 7

Fig. 3

4. i) Determine the small signal AC gain of the circuit shown in *Figure 4*. 4

Fig. 4

ii) Explain how cascade current sink configuration improves the output impedance of a simple current sink circuit. 6

END