

Analog and Mixed Mode VLSI Design

Written by Administrator

Saturday, 07 November 2009 05:26 -

Subject Code		:
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IA Marks		: 25
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No. of Lecture Hrs/Week		: 04
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Exam Hours		: 03
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Total no. of Lecture Hrs.		: 52
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Exam Marks		: 100
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PART – A

(Text Book 1)

Unit 1

Data converter fundamentals: Analog versus Digital Discrete Time Signals, Converting Analog Signals to Data Signals, Sample and Hold Characteristics, DAC Specifications, ADC Specifications, Mixed-Signal Layout Issues.

06Hours

Unit 2

Data Converters Architectures: DAC Architectures, Digital Input Code, Resistors String, R-2R Ladder Networks, Current Steering, Charge Scaling DACs, Cyclic DAC, Pipeline DAC, ADC Architectures, Flash, 2-Step Flash ADC, Pipeline ADC, Integrating ADC, Successive Approximation ADC.

14Hours

Unit 3

Non-Linear Analog Circuits: Basic CMOS Comparator Design (Excluding Characterization), Analog Multipliers, Multiplying Quad (Excluding Stimulation), Level Shifting (Excluding Input Level Shifting For Multiplier).

06Hours

PART B

(Text Book 2)

Unit 4:

Data Converter SNR: Improving SNR Using Averaging (Excluding Jitter & Averaging onwards), Decimating Filters for ADCs (Excluding Decimating without Averaging onwards), Interpolating Filters for DAC, B and pass and High pass Sync filters.

06Hours

Unit 5

Su-Microns CMOS circuit design: Process Flow, Capacitors and Resistors, MOSFET Switch (upto Bidirectional Switches), Delay and adder Elements, Analog Circuits MOSFET Biasing (upto MOSFET Transition Frequency).

14Hours

Unit 6

OPamp Design (Excluding Circuits Noise onwards)

06Hours

TEXT BOOK:

1. **Design, Layout, Stimulation** ,R. Jacaob Baker, Harry W Li, David E Boyce, CMOS Circuit, PHI Edn, 2005
2. **CMOS- Mixed Signal Circuit Design** ,R. Jacaob Baker, (Vol II of CMOS: Circuit Design, Layout and Stimulation), IEEE Press and Wiley Interscience, 2002.

REFERENCE BOOKS:

1. **Design of Analog CMOS Integrated Circuits**, B Razavi, First Edition, McGraw Hill,2001.
2. **CMOS Analog Circuit Design**, P e Allen and D R Holberg, Second Edition, Oxford University Press,2002.