

CHAPTER 1 INTRODUCTION

- 1.1** An ADD/SUBTRACT logic circuit is shown below. It performs the ADD operation for $P = 0$, and SUBTRACT for $P = 1$.
- Draw an equivalent CMOS logic diagram by noting that most CMOS gates, except for transmission gate and XOR, are inverting. For example, AND gate is implemented with NAND followed by an inverter.
 - By using the gate array platform given on page 47, implement the CMOS circuit as compactly as possible with the aspect ratio, which is the ratio of vertical dimension to horizontal dimension, as close to 1 as possible.

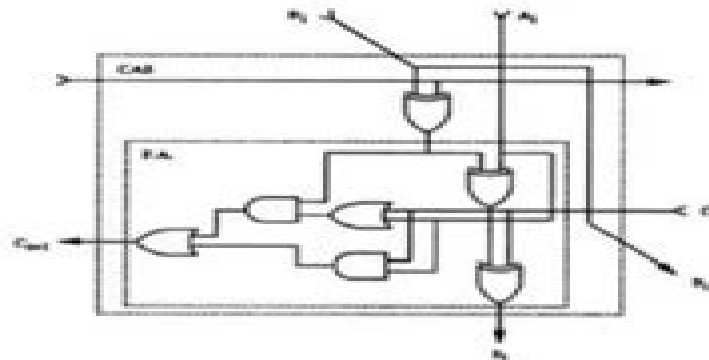


Figure P14.1(a)

SOLUTION:

- The CMOS circuit implementation using the gate array platform:

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Sung-Mo Kang, Yusuf Leblebici



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Analysis and Solutions for Switching Noise Coupling in Mixed-Signal ICs X. Aragones, J.L. Gonzalez, Antonio Rubio, 2013-03-09 Modern microelectronic design is characterized by the integration of full systems on a single die These systems often include large high performance digital circuitry high resolution analog parts high driving I O and maybe RF sections Designers of such systems are constantly faced with the challenge to achieve compatibility in electrical characteristics of every section some circuitry presents fast transients and large consumption spikes whereas others require quiet environments to achieve resolutions well beyond millivolts Coupling between those sections is usually unavoidable since the entire system shares the same silicon substrate bulk and the same package Understanding the way coupling is produced and knowing methods to isolate coupled circuitry and how to apply every method is then mandatory knowledge for every IC designer Analysis and Solutions for Switching Noise Coupling in Mixed Signal ICs is an in depth look at coupling through the common silicon substrate and noise at the power supply lines It explains the elementary knowledge needed to understand these phenomena and presents a review of previous works and new research results The aim is to provide an understanding of the reasons for these particular ways of coupling review and suggest solutions to noise coupling and provide criteria to apply noise reduction Analysis and Solutions for Switching Noise Coupling in Mixed Signal ICs is an ideal book both as introductory material to noise coupling problems in mixed signal ICs and for more advanced designers facing

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Design and Analysis of High Efficiency Line Drivers for xDSL Tim Piessens, Michiel Steyaert, 2005-12-30 Design and Analysis of High Efficiency Line Drivers for xDSL covers the most important building block of an xDSL ADSL VDSL system the line driver Traditional Class AB line drivers consume more than 70% of the total power budget of state of the art ADSL modems This book describes the main difficulties in designing line drivers for xDSL The most important specifications are elaborated starting from the main properties of the channel and the signal properties The traditional class AB state of the art class G and future technologies class K are discussed The main part of Design and Analysis of High Efficiency Line Drivers for xDSL describes the design of a novel architecture the Self Oscillating Power Amplifier or SOPA **Single-chip**

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and Testing Louis Scheffer, Luciano Lavagno, Grant Martin, 2018-10-03 Presenting a comprehensive overview of the design automation algorithms tools and methodologies used to design integrated circuits the Electronic Design Automation for Integrated Circuits Handbook is available in two volumes The first volume EDA for IC System Design Verification and Testing thoroughly examines system level design microarchitectural design logical verification and testing Chapters contributed by leading experts authoritatively discuss processor modeling and design tools using performance metrics to select microprocessor cores for IC designs design and verification languages digital simulation hardware acceleration and emulation and much more Save on the complete set **Proceedings of the ... International Conference on Microelectronics** ,2001 *Exploring the Intricacies of Digital and Analog VLSI* Guha, Koushik, Kandpal, Jyoti, Devi, Swagata, 2025-04-16 Advancements in Very Large Scale Integration VLSI technology are at the heart of modern electronic innovation enabling the integration of millions of transistors onto a single chip This field is essential for developing efficient high performance systems that power everything from smartphones to advanced computing technologies By addressing both digital and analog VLSI design this topic explores the challenges and solutions involved in optimizing power signal integrity and functionality The impact of VLSI extends across industries driving technological progress and shaping the future of electronics in an increasingly interconnected world Exploring the Intricacies of Digital and Analog VLSI explores advanced techniques practical applications and emerging trends in both digital and analog VLSI It consolidates existing knowledge while introducing cutting edge methodologies and insights shaping the trajectory of future research endeavors in VLSI This book covers topics such as electrical engineering optimization techniques and computer science and is a useful resource for engineers computer scientists academicians and researchers

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