ANALOG CIRCUIT DESIGN

S.Y.B.Sc. ELECTRONIC SCIENCE

P-I, SEM-IV

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S.Y.B.Sc. Electronic Science,
Paper-I, Semester IV (EL-241).

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Preface

I have great pleasure to present this book on **Analog Circuit Design**, **S.Y.B.Sc. Electronic Science -Semester IV EL-241: Paper-I**. It is written as per the 2020 pattern, Choice Base Credit System (CBCS) syllabus of Savitribai Phule Pune University, Pune-411007 implemented from June-2020.

The author have tried his level best to simplify the difficult concept in electronic science with neat diagram and simple mathematical equation.

The basics of electronics which is required to understand the concept of Operational Amplifier is covered. The understanding of IC-741 as Astable Multivibrator is made very simple by drawing the diagrams. The applications of Operational Amplifier IC-741 are made very simple.

Concept of negative feedback Types of feedback circuits: current shunt, current series, voltage shunt and voltage series, First sorder butter worth active filter Concept of Positive Feedback: Barkhaussain criterion, Oscillator circuits - Wien bridge, Phase Shift are explain in simple language and very symmetrically.

I thank to Publisher IIP Publishing House (IPH) www.iiponline.org for helping me to publish this book.

Acknowledgement

Firstly, I thank the Almighty **Allah,** Creator of Universe for making me physically and mentally capable of undertaking this work.

I offer my Sincere thanks to the management of Poona College of Arts, Science and Commerce Camp-Pune-411001, Y and M, Anjuman Khairul Islam Mumbai for providing me the necessary facility to complete the work.

I owe a special debt of gratitude to Dr. Aftab Anwar Shaikh, Principal Poona College of Arts, Science and Commerce, Camp, Pune-411001, Dr. Arunkumar Walunj, Head Department of Electronic Science, Dr. Aif Shaikh, Ex-Head Department of Electronic Science, Mr. Z.B. Pathan Ex-Head Department of Electronic Science, Dr. Gulam Rabbani my research Guide for cooperation, motivation and continuous help. Dr. Mahtab Alam Head Department of Computer Science.

I express my thanks to Dr. S. N. Kotwal and Mr. J. B. Shikalger for their blessings and encouragement. The present work is dedicated to my beloved late parents, whose love and affection apart from their moral support made it possible to complete. My wife, Mrs. Shabana, son Azim and lovely daughter Alfiya deserve special mention for their continuous support and sacrifice.

Finally I would like to thank all teaching and non teaching staff of Electronic Science Department of Poona College, Camp, Pune-411001 friends, and all those who are directly or indirectly involved in helping me to complete this work.

Dr. Arif Tamboli

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Main content of the book

Op-Amp, Ideal and practical characteristics of Op-Amp, Virtual ground Concept, Applications of Op-Amp as Inverting Amplifier, Non Inverting Amplifier.

Applications of Op-Amp IC-741 as Integrator, Differentiator, First order butter worth active filter

IC-741–functional block diagram, Pin diagram. Astable Multivibrator using IC-741, Operation, formula of output frequency, Duty cycle. Concept of Positive Feedback: Barkhaussain criterion, Oscillator circuits -Wien bridge Oscillator, Phase Shift Oscillator.

Classification of power amplifiers on the basis of conduction: class-A, class-B, class-AB, class-C.

Class-A amplifier: resistive load / transformer coupled load, efficiency calculation. Concept of harmonic distortion. Thermal Resistance.

Class B amplifier: Push-pull amplifier concept, complimentary symmetry class-B push pull amplifier, crossover distortion, class AB push pull amplifier, Types of heat sinks. Audio Amplifier, Design of Public Address System, Design of function generator.

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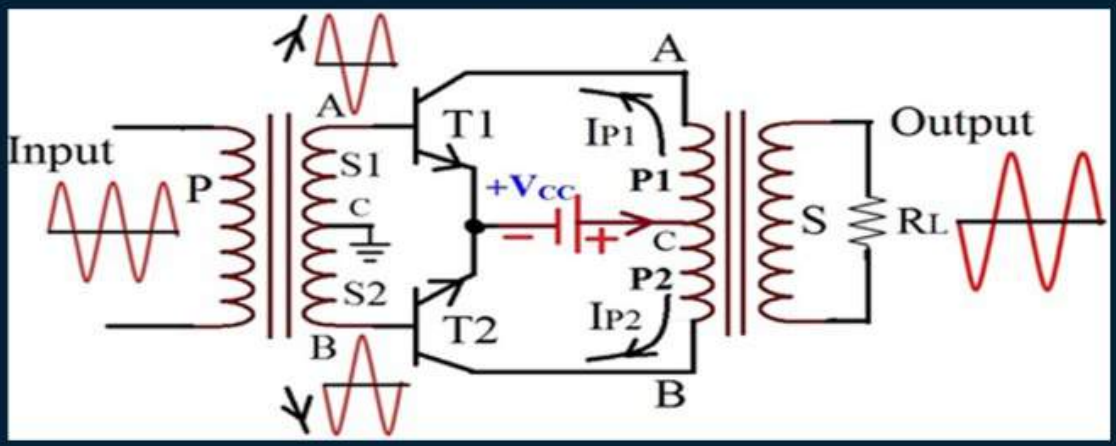
About Book



The Book Contains information of Op-Amp, Ideal and practical characteristics of Op-Amp, Virtual ground Concept, Op-Amp as Inverting Amplifier, Non Inverting Amplifier. Astable Multivibrator using IC-741, Operation, formula of output frequency, Duty cycle. Concept of Positive Feedback: Barkhaussain criterion, Oscillator circuits -Wien bridge Oscillator, Phase Shift Oscillator.Thermal Resistance.Design of function generator.

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