

**A Textbook of**

# Fundamentals of Electric Circuits



**Dr. Nibedita Das** is an accomplished academican serving as an Associate Professor in the Department of Information and Communication Technology at Tecnia Institute of Advanced Studies, Delhi, India. She holds a Ph.D. from IRINS-IIT Dhanbad and is certified by IIM Ahmedabad in Renewable Energy and Leadership Skills. Dr. Das possesses over 14 years of expertise in academia and research, with 22 publications in international journals, patent in internationally and completed 3 lakh funded Seed Grant Cloud build Soar PV Project in 20204. She serves as an editor for the IIP Series on Renewable & Sustainable Energy and is a fellow of IEEE Access. Among her honors are the Young Achiever (2020) and Women Mobilizer (2024) awards. Her research interests span Power Electronics, Control Systems, AI, ML, Deep Learning, NLP, Renewable Energy, and semiconductor-integrated software systems for urban mobility.



**Prof. Dr. R. Swaminathan** is a distinguished academic leader and industry expert with a Ph.D. in Electronics and Communication Engineering and over 18 years of experience across academia, research, and industry, contributing significantly to teaching innovation, academic leadership, and applied research. He has published more than 30 papers in reputed national and international journals and conferences indexed in Scopus and Web of Science, and brings valuable international exposure through his service in Ethiopian government universities. He has held senior academic and administrative positions including Director, Dean, Head of Department, and Professor, secured ATAL (AICTE) funding for research and faculty development, and executed industry consultancy and collaborative projects with organizations such as Numergion Technologies and NASSCOM. A recipient of a German patent and holder of multiple Indian patents, he demonstrates a strong commitment to innovation and technology commercialization, complemented by his hands-on expertise in advanced drone and UAV technologies as a DGCA-certified Drone Remote Pilot License holder, and active professional memberships in IEEE, IAENG, InSc, and IAAC.



**Dr. S. Muthurajan** teaches Electrical and Electronics Engineering subjects in the Department of Marine Engineering in Academy of Maritime Education and Training (AMET), Deemed to be University, ECR, Kanathur, Chennai. He has completed his B.E in National Engineering College, Kovilpatti. He did his Post Graduate in Industrial Electronics from the Maharaja Sayajirao University of Baroda, Gujarat and he was awarded a Ph.D from St. Peter's Institute of Higher Education and Research, Chennai. He has published various technical papers in reputed journals. His experience in teaching career helps the students enhance their Engineering knowledge. This book aims to give students more ideas in Electric circuit concepts.



**Dr. S. V. G. V. A. Prasad** is a physicist, author, and educator specializing in photonic materials and spectroscopy. He serves as a faculty member in the Department of Physics & Electronics at Pithapur Rajah's Government College (Autonomous), Kakinada. Holding an M.Sc. from Andhra University and an M.Phil. and Ph.D. from Acharya Nagarjuna University, his research focuses on doped phosphate and borate glasses and their optical properties. Dr. Prasad has authored and edited several books across physics, nanoscience, and interdisciplinary domains. His teaching integrates simulation-based and low-cost experimental methods to enhance accessibility in science education. He has contributed as a reviewer, editor, and curriculum designer in academic governance. His broader interests include green materials, photocatalysis, and computational materials research. Passionate about pedagogy, he bridges rigorous research with practical, student-centered learning.



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