Contents

About the authors ix
List of contributors xiii
Preface xvi

1 Fundamentals of power electronics in smart cities 1
AHTESHAMUL HAQUE, NAILA SHAH, JUNAID AHMAD MALIK, AND AZRA MALIK

2 Fundamentals of renewable energy resources for smart cities 25
MANEESH KUMAR, HIMANSHU SHARMA, AND SOURAV DIWANIA

3 Fundamentals of internet of things (IoT) for smart cities 50
MOHAMMAD ADNAN, AHTESHAMUL HAQUE, MD SARWAR, ANWAR SHAHZAD SIDDIQUI, AND PRASHANT

4 Role and applications of power electronics, renewable energy and IoT in smart cities 66
AHTESHAMUL HAQUE, K. V. S. BHARATH, MOHAMMAD AMIR, AND MD ZAFAR KHAN

5 Smart grid concept and technologies for smart cities 96
AHTESHAMUL HAQUE, K. V. S. BHARATH, AND SUWAIBA MATEEN

6 Smart agriculture for smart cities 130
AKHTAR KALAM AND NEIRAT MOHAMAD FAYEZ MUSTAFA

7 Deep learning-based autonomous vehicle to vehicle detection for smart traffic monitoring in smart cities 157
MOHAMMAD AMIR, AHTESHAMUL HAQUE, AND ZAHEERUDDIN

8 Integration of power electronics in renewable energy for smart cities 177
HIMANSHU SHARMA AND AHTESHAMUL HAQUE

9 Integration of IoT in renewable energy for smart cities 199
SHRANKHLA SAXENA, HIMANSHU SHARMA, ABHINAV JUNEJA, AND KHUSHBOO PANDEY

10 Power electronics and IoT for electric vehicles in smart cities 224
HIMANSHI CHAUDHARY, MANISH BHARDWAJ, SHWETA SINGH, AND HIMANSHU SHARMA

11 Machine learning-based DNS traffic monitoring for securing IoT networks 236
MEHWISH WEQAR, SHABANA MEHFUZ, AND DHAWAL GUPTA

12 Machine learning in power electronics for smart cities 253
AHTESHAMUL HAQUE, K. V. S. BHARAT, FATIMA SHABIR ZEHGEER, AND AZRA MALIK

13 Machine learning in renewable energy systems for smart cities 287
AHTESHAMUL HAQUE AND AZRA MALIK

Index *315*