

Preface	xi
List of Tables	xiii
1 Simulation of Electric Circuits with TINA-TI®	1
1.1 Introduction	1
1.2 Example 1: Simple Resistive Voltage Divider	7
1.3 Example 2: Volt Meter and Ampere Meter Blocks	34
1.4 Example 3: Open Circuit and Current Arrow Blocks	39
1.5 Example 4: RLC Circuit with Non-zero Initial Condition	41
1.6 Example 5: Exporting the Obtained Waveforms as a Graphical File	62
1.7 Example 6: Exporting the Obtained Waveforms as Text File	63
1.8 Example 7: RLC Circuit with Zero Initial Condition	66
1.9 Example 8: Initial Condition Blocks	72
1.10 Example 9: Importing the TINA-TI Analysis Result into MATLAB®	76
1.11 Example 10: Measurement of Phase Difference	84
1.12 Example 11: Power Meter Block	89
1.13 Example 12: Drawing the Instantaneous Power Waveform (I)	93
1.14 Example 13: Drawing the Instantaneous Power Waveform (II)	99
1.15 Example 14: Ohm Meter block (I)	114
1.16 Example 15: Ohm Meter Block (II)	117
1.17 Example 16: Thevenin Equivalent Circuit	121
1.18 Example 17: Measurement of Thevenin Resistance	129
1.19 Example 18: Current Controlled Voltage Source	131
1.20 Example 19: Voltage Controlled Current Sources Block	134
1.21 Example 20: Switch Block	138
1.22 Example 21: Three Phase Source	143
1.23 Example 22: Jumper Block	145
1.24 Example 23: Coupled Inductors	151
1.25 Example 24: Transformer	159
1.26 Example 25: Unit Impulse Response of Electric Circuits	165
1.27 Example 26: Unit Step Response of Circuits	170
1.28 Example 27: Frequency Response of Electric Circuits (I)	174
1.29 Example 28: Frequency Response of Electric Circuits (II)	180
1.30 Example 29: Input Impedance of Electric Circuits	185
1.31 Example 30: Drawing the Input Impedance of Electric Circuits	189
1.32 Example 31: Phasor Analysis	192
1.33 Example 32: Parameter Sweep Analysis	197
1.34 Exercises	207
References	210
2 Simulation of Electronic Circuits with TINA-TI®	211
2.1 Introduction	211
2.2 Example 1: Half Wave Rectifier	211
2.3 Example 2: Measurement of Average and RMS Values of Waveforms	216
2.4 Example 3: Harmonic Content of Waveforms	222
2.5 Example 4: Fourier Analysis	228
2.6 Example 5: Converting a Waveform into Sound	231
2.7 Example 6: DC Transfer Characteristics (I)	231
2.8 Example 7: DC Transfer Characteristics (II)	234
2.9 Example 8: DC Transfer Characteristics (III)	237
2.10 Example 9: Temperature Analysis	240
2.11 Example 10: Addition of SPICE Models to TINA-TI®	244
2.12 Example 11: Switching Behavior of Diodes	250
2.13 Example 12: Small Signal AC Resistance of Diodes	257
2.14 Example 13: Full Wave Rectifier (I)	262
2.15 Example 14: Full Wave Rectifier (II)	272
2.16 Example 15: Controlled Rectifier	284
2.17 Example 16: Measurement of Operating Point of Common Emitter Amplifier	305
2.18 Example 17: Measurement of Voltage Gain for Common Emitter Amplifier	313
2.19 Example 18: Total Harmonic Distortion (THD) of Common Emitter	317
2.20 Example 19: THD of Common Emitter Amplifier (II)	322
2.21 Example 20: Frequency Response of Common Emitter Amplifier (I)	325
2.22 Example 21: Frequency Response of Common Emitter Amplifier (II)	332
2.23 Example 22: Input Impedance of Common Emitter Amplifier	336
2.24 Example 23: Output Impedance of Common Emitter Amplifier	351
2.25 Example 24: Measurement of Input/Output Impedance with Ohm Meter Block	352
2.26 Example 25: Modeling a Custom Bipolar Transistor	355
2.27 Example 26: Modeling a Custom Field Effect Transistor	357
2.28 Example 27: Generating the List of Circuit Components	358
2.29 Example 28: Non Inverting op amp Amplifier	359
2.30 Example 29: Stability of op amp Amplifiers	371
2.31 Example 30: Measurement of DC Operating Point	382
2.32 Example 31: Measurement of Common Mode Rejection Ratio (CMRR)	386
2.33 Example 32: Astable Oscillator	397
2.34 Example 33: Buck Converter	403
2.35 Example 34: Operating Mode of Converter	417
2.36 Example 35: Generating a Pulse with Desired Duty Cycle	422
2.37 Exercises	436
References	439
Index	439