

# Contents

<b>Preface .....</b>	<b>XIII</b>
<b>1 Water Purification .....</b>	<b>1</b>
1.1 Drinking Clean Water .....	1
1.1.1 Introduction .....	1
1.1.2 Exercise .....	2
1.2 Giving Instructions .....	2
1.2.1 Introduction .....	2
1.2.2 Exercise .....	3
1.3 Process Description .....	3
1.3.1 Introduction .....	3
1.3.2 Exercises .....	5
1.4 Writing a Lab Report .....	8
1.4.1 Introduction .....	8
1.4.2 Exercises .....	9
<b>2 Biomimicry .....</b>	<b>11</b>
2.1 Bionics, Biomimetics and Biomimicry .....	11
2.1.1 Text .....	11
2.1.2 Discussion .....	12
2.2 Natural Object vs. Technical Product .....	13
2.2.1 Exercise 1: The Kingfisher and the Shinkansen Train in Japan .....	13
2.2.2 Exercise 2: Burdock and Hook and Loop Fasteners .....	15
2.3 Bionics .....	17

2.3.1	Bionic Penguins – Technology-Bearers as Autonomous Underwater Vehicles .....	17
2.3.1.1	Text .....	17
2.3.1.2	Vocabulary .....	19
2.3.1.3	Comprehension .....	19
2.3.2	Honeycomb Structure .....	21
2.3.2.1	Text .....	21
2.3.2.2	Comprehension .....	22
2.3.2.3	Vocabulary .....	23
<b>3</b>	<b>Autonomous Driving .....</b>	<b>27</b>
3.1	Congressional Report on Autonomous Driving .....	27
3.1.1	Text .....	27
3.1.2	Vocabulary .....	32
3.1.3	Comprehension .....	33
3.1.4	Tense Review .....	34
3.1.4.1	Introduction .....	34
3.1.4.2	Exercise .....	35
<b>4</b>	<b>Wind Turbines .....</b>	<b>37</b>
4.1	An Introduction to Gearbox and Direct Drive Wind Turbines .....	37
4.1.1	Text .....	37
4.1.2	Comprehension .....	40
4.2	Academic Register .....	41
4.2.1	Introduction .....	41
4.2.2	Exercise .....	43
<b>5</b>	<b>Green Aviation .....</b>	<b>47</b>
5.1	Hydrogen: The Fuel of the Future? .....	47
5.1.1	Text .....	47
5.1.2	Comprehension .....	49
5.1.3	Vocabulary .....	50
5.2	Composite Materials .....	51
5.2.1	Text .....	51

5.2.2	Vocabulary .....	52
5.2.3	Discussion .....	53
5.3	False Friends .....	54
5.3.1	Definition .....	54
5.3.2	Exercise .....	55
5.4	Describing the Movement of a Graph .....	57
5.4.1	Introduction .....	57
5.4.2	Exercise .....	61
<b>6</b>	<b>Satellites and Space Debris .....</b>	<b>63</b>
6.1	The Mitigation of Space Debris .....	63
6.1.1	Text .....	63
6.1.2	Comprehension .....	68
6.1.3	Vocabulary .....	68
6.1.4	Exercise .....	70
<b>7</b>	<b>Particle Physics .....</b>	<b>73</b>
7.1	The Fundamentals of Particle Physics .....	73
7.1.1	Text .....	73
7.1.2	Comprehension .....	76
7.1.3	Vocabulary .....	77
7.2	The Next Model? .....	78
7.2.1	Research and Writing Task .....	79
7.2.2	Meditation Task and Speaking Exercise .....	80
7.3	Common Chemical Elements from the Periodic Table .....	80
7.3.1	Exercise .....	80
7.3.2	Comprehension .....	81
<b>8</b>	<b>Materials .....</b>	<b>83</b>
8.1	Introduction .....	83
8.1.1	Warm-Up Exercise .....	83
8.1.2	Group Work .....	83
8.2	Concrete .....	84
8.2.1	Text .....	84

8.2.2	Exercise 1: Mix and Match .....	86
8.2.3	Exercise 2: Mix and Match .....	86
8.2.4	Comprehension .....	87
8.3	Steel .....	88
8.3.1	Text .....	88
8.3.2	Exercise 1: Mix and Match .....	90
8.3.3	Exercise 2: Definition .....	91
8.3.4	Comprehension .....	91
8.4	Timber .....	92
8.4.1	Text .....	92
8.4.2	Exercise 1: Label the Illustration .....	94
8.4.3	Exercise 2: Mix and Match .....	95
8.4.4	Comprehension .....	96
8.5	Discourse Markers .....	97
8.5.1	Exercise .....	97
8.5.2	Group Work .....	98
<b>9</b>	<b>High-rise and Skyscraper Construction .....</b>	<b>105</b>
9.1	The History of Skyscraper Construction .....	105
9.1.1	Text .....	105
9.1.2	Vocabulary .....	107
9.1.3	Exercise: Label the Illustration .....	108
9.2	The Gherkin – One of the World’s Most Iconic Buildings .....	109
9.2.1	Using Prepositions: Introduction .....	109
9.2.2	Using Prepositions: Exercise .....	112
<b>10</b>	<b>Bridges .....</b>	<b>115</b>
10.1	Bridge Elements .....	115
10.1.1	Text .....	115
10.1.2	Exercise 1: Label the Illustration .....	116
10.1.3	Exercise 2: Mix and Match .....	117
10.1.4	Exercise 3: Mix and Match .....	118
10.2	A Bridge for Every Situation .....	119
10.2.1	Listening Comprehension .....	119

10.2.2	Exercise 1: Punctuation .....	122
10.2.3	Exercise 2: Punctuation .....	122
10.2.4	Exercise 3: Punctuation .....	124
<b>11</b>	<b>Appendix 1: James Bond 007—Reading Numbers Aloud in English .....</b>	<b>127</b>
11.1	Multiple Digits .....	127
11.2	Zero .....	127
11.3	The Decimal Point .....	128
11.4	Plural Forms and False Friends .....	129
11.5	Dates .....	129
11.6	Fractions .....	130
11.7	Percent .....	130
<b>12</b>	<b>Appendix 2: Mathematical Symbols and Formulae .....</b>	<b>131</b>
<b>13</b>	<b>Appendix 3: Example of a Lab Report .....</b>	<b>133</b>
<b>14</b>	<b>Appendix 4: Student’s Lexicon .....</b>	<b>139</b>
<b>15</b>	<b>Answer Key .....</b>	<b>143</b>
15.1	Chapter 1 .....	143
15.1.1	Section 1.1.2, Exercise .....	143
15.1.2	Section 1.2.2, Exercise .....	143
15.1.3	Section 1.3.2, Exercises .....	144
15.1.4	Section 1.4.2, Exercises .....	146
15.2	Chapter 2 .....	147
15.2.1	Section 2.1.2, Discussion .....	147
15.2.2	Section 2.2.1, Exercise 1: The Kingfisher and the Shinkansen Train in Japan .....	147
15.2.3	Section 2.2.2, Exercise 2: Burdock and Hook and Loop Fasteners .....	148
15.2.4	Section 2.3.1.2, Vocabulary .....	148
15.2.5	Section 2.3.1.3, Comprehension .....	149
15.2.6	Section 2.3.2.2, Comprehension .....	149
15.2.7	Section 2.3.2.3, Vocabulary .....	149

15.3	Chapter 3 .....	150
15.3.1	Section 3.1.2, Vocabulary .....	150
15.3.2	Section 3.1.3, Comprehension .....	151
15.3.3	Section 3.1.4, Tense Review .....	151
15.4	Chapter 4 .....	152
15.4.1	Section 4.1.2, Comprehension .....	152
15.4.2	Section 4.2.2, Exercise .....	152
15.5	Chapter 5 .....	153
15.5.1	Section 5.1.2, Comprehension .....	153
15.5.2	Section 5.1.3, Vocabulary .....	153
15.5.3	Section 5.2.2, Vocabulary .....	154
15.5.4	Section 5.2.3, Discussion .....	154
15.5.5	Section 5.3.2, Exercise .....	155
15.5.6	Section 5.4.2, Exercise .....	157
15.6	Chapter 6 .....	158
15.6.1	Section 6.1.2, Comprehension .....	158
15.6.2	Section 6.1.3, Vocabulary .....	158
15.6.3	Section 6.1.4, Exercise .....	158
15.7	Chapter 7 .....	159
15.7.1	Section 7.1.2, Comprehension .....	159
15.7.2	Section 7.1.3, Vocabulary .....	159
15.7.3	Section 7.2.1, Research and Writing Task .....	160
15.7.4	Section 7.2.2, Meditation Task and Speaking Exercise .....	160
15.7.5	Section 7.3.1, Exercise .....	160
15.7.6	Section 7.3.2, Comprehension .....	161
15.8	Chapter 8 .....	161
15.8.1	Section 8.1.1, Warm-Up Exercise .....	161
15.8.2	Section 8.1.2, Group Work .....	161
15.8.3	Section 8.2.2, Exercise 1: Mix and Match .....	161
15.8.4	Section 8.2.3, Exercise 2: Mix and Match .....	162
15.8.5	Section 8.2.4, Comprehension .....	163
15.8.6	Section 8.3.2, Exercise 1: Mix and Match .....	163
15.8.7	Section 8.3.3, Exercise 2: Definition .....	164

15.8.8	Section 8.3.4, Comprehension . . . . .	164
15.8.9	Section 8.4.2, Exercise 1: Label the Illustration . . . . .	164
15.8.10	Section 8.4.3, Exercise 2: Mix and Match . . . . .	165
15.8.11	Section 8.4.4, Comprehension . . . . .	165
15.8.12	Section 8.5.1, Exercise . . . . .	166
15.8.13	Section 8.5.2, Group Work . . . . .	167
15.9	Chapter 9 . . . . .	167
15.9.1	Section 9.1.2, Vocabulary . . . . .	167
15.9.2	Section 9.1.3, Label the Illustration . . . . .	168
15.9.3	Section 9.2.2, Using Prepositions: Exercise . . . . .	168
15.10	Chapter 10 . . . . .	170
15.10.1	Section 10.1.2, Exercise 1: Label the Illustration . . . . .	170
15.10.2	Section 10.1.3, Exercise 2: Mix and Match . . . . .	170
15.10.3	Section 10.1.4, Exercise 3: Mix and Match . . . . .	172
15.10.4	Section 10.2.1, Listening Comprehension . . . . .	172
15.10.5	Section 10.2.2, Exercise 1: Punctuation . . . . .	173
15.10.6	Section 10.2.3, Exercise 2: Punctuation . . . . .	174
15.10.7	Section 10.2.4, Exercise 3: Punctuation . . . . .	174
15.11	Chapter 12 (Appendix 2) . . . . .	175