

# 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