

# Revision contents

## Topic 1

### CELL BIOLOGY

Eukaryotes and prokaryotes	10
Animal and plant cells	11
Cell specialisation	12
Cell differentiation	13
Microscopy	14
Culturing microorganisms	15
Using a light microscope	17
Investigating the effect of antiseptics or antibiotics	19
Mitosis and the cell cycle	20
Stem cells	21
Diffusion	23
Osmosis	25
Investigating the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue	27
Active transport	28
Review It!	29

## Topic 2

### TISSUES, ORGANS AND ORGAN SYSTEMS

The human digestive system	30
Enzymes	32
Food tests	34
The effect of pH on amylase	35
The heart	36
The lungs	37
Blood vessels	38
Blood	39
Coronary heart disease	40
Health issues	42
Effect of lifestyle on health	44
Cancer	45
Plant tissues	46
Transpiration and translocation	47
Review It!	49

## Topic 3

### INFECTION AND RESPONSE

Communicable diseases	50
Viral diseases	52
Bacterial diseases	53
Fungal and protist diseases	54
Human defence systems	55
Vaccination	56
Antibiotics and painkillers	57
New drugs	58
Monoclonal antibodies	59
Monoclonal antibody uses	60
Plant diseases	61
Plant defences	63
Review It!	64

## Topic 4

### BIOENERGETICS

Photosynthesis	65
Rate of photosynthesis	66
Investigating the effect of light intensity on the rate of photosynthesis	68
Uses of glucose	69
Respiration	70
Response to exercise	72
Metabolism	73
Review It!	74

**HOMEOSTASIS AND RESPONSE**

Homeostasis	75
The human nervous system	76
Reflexes	77
Investigating the effect of a factor on human reaction time	79
The brain	80
The eye	81
Focusing the light	82
Control of body temperature	83
Human endocrine system	84
Control of blood glucose concentration	85
Diabetes	86
Maintaining water and nitrogen balance in the body	88
ADH	90
Dialysis	91
Hormones in human reproduction	92
Contraception	94
Using hormones to treat infertility	95
Negative feedback	96
Plant hormones	97
Investigating the effect of light or gravity on the growth of newly germinated seedlings	98
<b>Review It!</b>	<b>99</b>

**INHERITANCE, VARIATION AND EVOLUTION**

Sexual and asexual reproduction	100
Meiosis	102
DNA and the genome	103
DNA structure	104
Protein synthesis	105
Genetic inheritance	107
Punnett squares	109
Inherited disorders	110
Variation	112
Evolution	113
Selective breeding	114
Genetic engineering	115
Cloning	117
Theory of evolution	119
Speciation	120
The understanding of genetics	121
Evidence for evolution	122
Classification	124
<b>Review It!</b>	<b>126</b>

**ECOLOGY**

Communities	127
Abiotic factors	129
Biotic factors	130
Adaptations	131
Food chains	132
Measuring species	133
Investigating the relationship between organisms and their environment	135
The carbon cycle	136
The water cycle	137
Decomposition	138
Investigating the effect of temperature in the rate of decay	139
Impact of environmental change	140
Biodiversity	141
Global warming	142
Maintaining biodiversity	143
Trophic levels	144
Pyramids of biomass	145
Food production	146
Role of biotechnology	147
<b>Review It!</b>	<b>148</b>
Glossary/Index	149
Answers for the Revision Guide	155

Topic 5

Topic 6

Topic 7

# Exam practice contents

## Topic 1

### CELL BIOLOGY

---

Eukaryotes and prokaryotes	164
Animal and plant cells	165
Cell specialisation and differentiation	166
Microscopy	167
Culturing microorganisms	168
Using a light microscope	169
Investigating the effect of antiseptics or antibiotics	170
Mitosis and the cell cycle	171
Stem cells	172
Diffusion	173
Osmosis	174
Investigating the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue	175
Active transport	176

## Topic 2

### TISSUES, ORGANS AND ORGAN SYSTEMS

---

The human digestive system and enzymes	177
Food tests	179
The effect of pH on amylase	180
The heart	181
The lungs	182
Blood vessels and blood	183
Coronary heart disease	184
Health issues and effect of lifestyle	185
Cancer	186
Plant tissues	187
Transpiration and translocation	188

## Topic 3

### INFECTION AND RESPONSE

---

Communicable (infectious) diseases	189
Viral and bacterial diseases	190
Fungal and protist diseases	191
Human defence systems	192
Vaccination	193
Antibiotics and painkillers	194
New drugs	195
Monoclonal antibodies and their uses	196
Plant diseases and defences	197

## Topic 4

### BIOENERGETICS

---

Photosynthesis	198
Rate of photosynthesis	199
Investigating the effect of light intensity on the rate of photosynthesis	200
Uses of glucose	201
Respiration and metabolism	202
Response to exercise	203

## Topic 5

### HOMEOSTASIS AND RESPONSE

---

Homeostasis	204
The human nervous system and reflexes	205
Investigating the effect of a factor on human reaction time	206
The brain and the eye	207
Focusing the eye	208
Control of body temperature	209
Human endocrine system	210
Control of blood glucose concentration	211
Diabetes	212
Maintaining water and nitrogen balance in the body	213
Dialysis	214
Hormones in human reproduction	215

Contraception	216
Using hormones to treat infertility	217
Negative feedback	218
Plant hormones	219
Investigating the effect of light or gravity on the growth of newly germinated seedlings	220
<b>INHERITANCE, VARIATION AND EVOLUTION</b>	
Sexual and asexual reproduction	221
Meiosis	222
DNA and the genome	223
DNA structure	224
Protein synthesis	225
Genetic inheritance	226
Inherited disorders	227
Variation	228
Evolution	229
Selective breeding	230
Genetic engineering and cloning	231
Evolution and speciation	232
The understanding of genetics	233
Classification	234
<b>ECOLOGY</b>	
Communities	235
Abiotic and biotic factors	236
Adaptations	238
Food chains	239
Measuring species	240
Investigating the relationship between organisms and their environment	241
The carbon cycle, nitrogen cycle and water cycle	242
Decomposition	243
Investigating the effect of temperature on the rate of decay	244
Impact of environmental change	245
Biodiversity	246
Global warming	247
Maintaining biodiversity	248
Trophic levels and pyramids of biomass	249
Food production and biotechnology	250
<b>PAPER 1</b>	251
<b>ANSWERS FOR EXAM PRACTICE</b>	252

Topic 6

Topic 7