

Table of Contents

Unit 5. Plant Science 2 1

5.1 Leaf Adaptations 1

Leaf function – Unit 1 recap	1
Hairy leaves.....	2
Waxy leaves.....	4
Succulent leaves	5
Rolled leaves.....	6
Reduced leaves	6
Leaf oils	6
Bulbs	7
Coloured leaves	9
Variegated leaves.....	10
Aerenchyma cells	10
Totipotency in leaves.....	10
Plant leaves and growing conditions	11
Benefits of leaf adaptations to green spaces	11

5.2 Stem Adaptations 13

Stem function – Unit 1 recap	13
Secondary thickening	14
Physical defence	15
Stem tendrils.....	16
Twining stems.....	16
Stolons and runners.....	17
Rhizomes	18
Stem tubers.....	19
Corms.....	19
Water storage in succulent stems.....	20
Colonisation via stems.....	20
Glandular hairs.....	21
Ducts containing essential oil.....	21
Totipotency in stems.....	21
Stems and wildlife habitats	22
Decorative stems.....	22
Stems and garden design styles.....	22

5.3 Root Adaptations 24

Root function – Unit 1 recap	24
Fibrous roots	25
Tap roots	25
Foraging roots.....	26
Root tropisms.....	27
Totipotency in roots	27
Adventitious root buds	27
Root tubers	28
Adventitious roots.....	29
Adventitious climbing roots	30
Prop roots	30
Root nodules in legumes.....	30
Pneumatophores	31

5.4 Flower Adaptations 32

Flower function – Unit 1 recap	32
Arrangement of flowers	33
Flower timing	35
Petal adaptations	37
Flower scent	37
Nectar production	38
Hermaphrodite flowers.....	38
Monoecious plants.....	39
Dioecious plants	39
Pollen	39
Pollination	40
Flowers and biodiversity	42

5.5 Seed Adaptations 43

Function of seeds.....	43
Quantity of seed.....	43
Seed dispersal	44
Seed dormancy.....	46
Seed coats.....	47
Lipid (fats/oils) storage	47
Orthodox seeds.....	47
Recalcitrant seeds	48
Germination requirements.....	48
Encouraging germination	48
Seeds and biodiversity.....	49
Seeds and garden maintenance.....	49

5.6 Growth Habit Adaptations 51

Woody plants.....	51
Herbaceous perennials	52
Low growing plants.....	53
Evergreen and deciduous	55
Growth habit and plant selection	57
Growth habit and biodiversity	57

Unit 6. Planting Styles..... 58

2.1 Historical Contexts 58

Overview of garden history.....	58
Renaissance gardens	58
Landscape style	60
Picturesque style	62
Gardenesque style	64
Arts and Crafts gardens	66
The Wild Garden.....	69
Modern Garden styles	71
Influence of historic styles over time	72
Influence of historic styles on today's garden design	72
Preserving historic gardens	73

6.2 Formal Planting 74

Overview of formal planting.....	74
Symmetry.....	74
Geometric layout.....	74
Formal hedges.....	74
Low enclosing hedges.....	74
Monochromatic and dichromatic colour schemes	75
Planting in even numbers	75
Formal water features	75
Adapting features to formal settings	75
Plant adaptations and formal planting	76
Formal planting and biodiversity	76
Formal planting and sustainability	76

6.3 Informal Planting 78

Overview of informal planting	78
Informal layouts	78
Informal plant arrangement.....	78
Informal colour palette	79
Planting in odd numbers	80
Informal water features	80
Adapting features to informal settings.....	80
Plant adaptations and informal planting....	81
Informal planting and biodiversity.....	82
Informal planting and sustainability	82

6.4 Plant Associations 84

Colour schemes	84
Plant height and form.....	84
Seasonal interest.....	85
Plant selection and garden style	87
Plant adaptations and plant associations..	87
Plant associations and biodiversity.....	88

6.5 Plant Uses 89

Height and structure	89
Shade	90
Attracting wildlife.....	91
Horizontal and vertical features	92
Screening and boundaries.....	93
Ecosystem services	93
Climate change mitigation	95
Impact of poor plant selection.....	96

6.6 Edible Landscapes 97

Overview of edible landscapes	97
Growing systems in Edible Landscapes	97
Planting styles for edible landscapes	99
allotments.....	99
Potager gardens.....	100
Accessible edibles.....	100
Container gardens for edibles	100
Community gardens	101

Community orchards.....	101
City farms	102
Patchwork farms	102
Edible hedges	103
Forest gardening	103
Guerrilla gardening.....	103
Support structures in edible landscapes .	104
Sustainability of edible landscapes	104
Social impacts of edible landscapes	107
Edible landscapes, health and wellbeing .	107

6.7 Short-term Plantings 108

Overview of short-term plantings	108
Suitable plants.....	108
Environmental impact of short-term plantings	109
Impact of short-term plantings on biodiversity	110

Unit 7. Horticulture and Society 111

7.1 Wellbeing..... 111

Physical and mental health benefits.....	111
Social benefits of gardening.....	112
Social benefits of urban greening	112
Social benefits of allotments	113
Historic wellbeing links.....	113

7.2 Environment 115

Plant ecosystem services	115
Carbon storage	117
Negative impacts of horticulture	118
Climate change and horticulture	121
Benefits of horticultural spaces to the environment	123

7.3 Economy..... 125

Garden tourism	125
Garden maintenance and landscaping	125
Plant production	125
Retail.....	125
Food production.....	125
Arboriculture.....	125
Other horticultural benefits to the economy	126

7.4 Community 127

Benefits of community horticulture	127
School and community projects	127
Britain in bloom.....	127
Horticultural therapy	128
Social enterprises	128
Public green space and communities	128
Community kitchens within gardens	129

Unit 8. Biodiversity.....130

8.1 Plants and Biodiversity 130

Importance of biodiversity.....	130
Food chains and webs	130
Examples of plant-animal associations...	132
Biodiversity and traditional attitudes to weeds and pests.....	132
Public gardens and biodiversity	133
Plant selection and biodiversity	133

8.2 Impact of Climate change 135

Expected climate change trends.....	135
Impacts of climate change on existing plantings	135
Planting for climate change resilient gardens	137

8.3 Creating Habitats 143

The importance of habitats within gardens	143
Creating different habitats within gardens	144
Maintaining garden habitats	151
Benefits of wildlife to people	151

8.4 Citizen Science and Species Surveys.... 152

What is citizen science?	152
Types of native species found in gardens.	153
How to identify and record garden wildlife	153
Apply knowledge of garden wildlife to habitat creation	154

8.5 Biodiversity Policies and Legislation 155

Biodiversity Policies and Legislation in the UK	155
Importance of biodiversity policy and legislation to garden decision making	155

Essential Information.....159

What to expect from the exam and how to prepare..... 159

The exams	159
How to prepare for the exams	160
Before the exam.....	161
Exam tips	161

Understanding the syllabus 163

Qualification-wide outcomes: 164

Health and safety.....	164
Sustainability	167
Best practice	170
Equality and diversity	171

Index.....173