0174-38 Level 3 Advanced Technical Extended Diploma in Forestry and Arboriculture

0174-514 Level 3 Forestry and Arboriculture – Theory exam (2)

March 2022 Mark Scheme

Q no	Acceptable answer(s)	Guidance	Max mks	Ref
Q1	**1 mark each, to a maximum of 2 marks** • London plane (1) • *Platanus* X *acerifolia* or *Platanus* X *hispanica* (1)	Will accept slight spelling mistake for the Latin name.	2	1.1 1.3 AO1
Q2	**1 mark each** *a)* • *Alnus glutinosa* (1) **1 mark each** b) • Silver birch (1)		2	1.1 AO1
Q3	**1 mark each, to a maximum of 2 marks:** • Canes (1) (to support) young whips (1) • Stakes/crossbar and ties (1) (to support) standard trees (1) • Underground anchors (1) (to support) semi- mature trees (1) • Guy wires (1) (to support) large trees where space allow (1)	Accept any suitable answer.	2	4.2 AO1
Q4	**1 mark for each requirement to a maximum of 2 marks** • Maintenance of support (1) to ensure it is serviceable/adjusted/removed (1) • Pest/disease control (1) to ensure the tree's health / survival / prevent spread (1) • Formative pruning (1) to improve the future structure of the tree (1) • Weed/competition removal (1) to increase resources available to the tree (1)	Do not accept 4 requirements.	4	3.1, 4.3 AO2

		Watering (1) to ensure good root establishment (1) • Maintenance of protection (1) to prevent vandalism (1) • Periodic monitoring (1) to ensure the tree's health / survival / pick up potential issues			
Q5	**1 mark each, to a maximum of 6 marks:** • Suitable method for large heavy trees (1) • Can move trees quickly (1) • Instant impact (1) • Usually used for re-locating mature trees (1) • Reduces manual handling (1) • Reuses/relocates high value trees (1) • Cost savings ie cheaper as fewer people needed/ quicker (1)	Accept any suitable correct answers.	6	3.2 AO2
Q6	**1 mark each, to a maximum of 4 marks:** • Indicator species eg wood sorrel (1) • Woodland name (1) • Boundary shape (1) • Wood banks (1) • Out-grown hedges (1) • Ditches (1) • Pits (1) • Charcoal hearths (1) • Saw pits (1) • Tracks (1)	Accept any suitable correct answers.	4	354 1.3 AO1
Q7	**1 mark for each influence, up to maximum of 2 marks** • A large quantity of timber was felled (throughout the UK) (1) for military use/ships/ coal/pit props (1) • In 1919 the Forestry Commission was founded (1) to restore UK deforestation/ensure the supply of timber (1) • Had a devastating effect on wildlife (1) due to loss of habitat (1) • The native broadleaf trees felled for timber are replaced with softwood species (1) as they are fast growing (1)	Accept any other suitable answers.	4	1.1 AO2

Q8	**1 mark for each limitation, to a maximum of 2 marks**	Accept any other suitable answers	4	3.2 AO2
	Chainsaw limitations • Chainsaws are bad for the environment (1) as they cause oil/noise pollution (1) • Chainsaws require PPE (1) which can be expensive (1) • Risk of HAVS/noise (for the operator) (1) which can cause safety issues (1) • Less accurate cuts (1) can cause poor regrowth/poor products (1) • Requires maintenance/training/Expensive to maintain (1) which can have financial implications (1) • Chainsaws are heavy (1) which increases operator stress / manual handling issues (1)			
Q9	**1 mark for each function, to a maximum of 2 marks.** • Transport of water and nutrients (1) • Support of canopy (1) • Storage of energy (1) • Defence against pathogens (1)	Accept any other suitable answers.	2	1.1 AO1
Q10	**1 mark for each environmental condition. 1 mark for each explanation.** • Extreme hot/cold temperatures (1) can increase or decrease growth and photosynthesis rates (1) • Wind/High wind loading (1) can lead to poor crown development/failure (1) • Poor soil health/lack of nutrients (1) leading to reduced growth and development. (1) • Drought/lack of water (1) limits physiological processes (1) • Waterlogging (1) creates an anaerobic environment that limits root activity (1) • Soil compaction (1) can inhibit root development/the ability to draw up water/nutrients (1) • External nutrient availability/High nutrient availability (1) may encourage weed growth/suppress tree growth (1) • Light levels / availability of light (1) can increase / decrease photosynthesis / growth rates (1) • Altitude (1) eg higher altitude limits tree growth/ potential to survive (or reference to the tree line ie beyond which growth is not possible) (1)	Accept any other suitable answers.	4	1.2, 1.3, 1.4 AO2

Q11	**1 mark for each benefit up to a maximum of 5 marks** • Primary vascular systems are unaffected with this method (1) • The branch collar remains intact (1) • Allows the wound to occlude much faster (1) • Reduces risk of infection by pathogens (1) • The Three step cut system allows control of direction and timing (1) • Removing stubs limits potential food base for fungi (1) • Reduces the chance of epicormic growth (1) • It adheres to BS 3998 (Tree work-recommendations) (1) • Removes potential hazards (1) • It is a safe method of pruning (1) • Improved timber quality (in future) (1)		5	3.2 AO2
Q12	**1 mark each, to a maximum of 5 marks:** • Storm damage (1) • Change in wind direction (1) • Over pruning (1) • Heavy rainfall (1) • Mechanical impact (1) • End loading (snow/ice) (1) • Decay/fungal infection (1) • Tree species/characteristics (1)	Accept any other suitable answers.	5	4.2, 4.3 AO1
Q13	**2 mark for each consequences, to a maximum of 4 marks:** • Storm damage-lightning strikes (1) can cause lateral cracks that split the main stem (1) • Change in wind direction (1) can cause windthrow/canopy damage (1) • Over pruning tree (1) reduces photosynthesis (1) • Heavy rainfall (1) can cause limb failure/stem splits/can lead to root instability (1) • Mechanical impact (1) can create open wounds for infection (1) • End loading (snow/ice) (1) can cause limb failure (1) • Decay/fungal infection (1) can cause wood decay and tree failure/windthrow (1) • Tree species/characteristics (1) (eg certain species) are common to branch drop (ash), dead wood and radial cracks (1)	Accept any other suitable answer provided	4	4.2, 4.3 AO2

Q14	**Indicative content**		12	351: 3.1-3.3, 4.1,4.3 354: 3.1, 3.2 355: 1.3, 1.4, 1.5, 2.4, 3.1,3.2, 4.1-4.4 AO4

Indicative content

- Species characteristics
- Management systems eg Weight reduction, dismantling, climbing, MEWP, pruning, replanting, stock
- Urban trees, environmental factors, draught, vandalism, water logging, salt damage, mechanical damage
- Pest and disease/threats eg fungi, grazing etc
- Cost/resources, logistics
- Planting / Restocking options eg species and sourcing, natural regeneration
- Inspections / re-surveying / aftercare eg beating up, individual tree management plans, tree risk management survey
- Awareness and protection of soil condition
- Support and protection eg guards, fencing, mammal control
- Pruning conventions eg use within trees, wound occlusion, timing of operations, CODIT, wound wood
- Equipment and resources
- Legislation eg risk assessment and PPE

Band 1: 1-4 marks
Limited understanding of the topic with a limited discussion, range and depth with regards to factors to be considered. Few or no links made between factors to be considered. To access the higher marks in the band, learners will attempt to use some technical terms but may not always be correct. Discussion is supported with a relevant example.

Band 2: 5-8 marks
Detailed discussion demonstrating a sound understanding of the topic with a wider range and depth with regards to factors to be considered. Some links made between factors to be considered. To access the higher marks in the band, learners will use a range of technical terms that are mostly correct. Discussion is more detailed and supported with a range of relevant examples.

Band 3: 9-12 marks
Comprehensive discussion demonstrating a thorough understanding of the topic with an extensive range and depth with regards to the factors to be considered. Consistent, relevant links made between factors to be considered and examples used. To access the higher marks in the band, learners will use appropriate and accurate technical terms throughout and apply a comprehensive range of examples.