0174-38 Level 3 Technical Extended Diploma in Forestry and Arboriculture
0174-512 Level 3 Forestry and Arboriculture – Theory Exam (1)

March 2022 Mark Scheme

Q no.	Acceptable answer(s)	Guidance	Max mks	Ref
Q1	Any **three** of the following up to a maximum of **three** marks. • Subsoiling (1) • Ploughing (1) • Single /double digging (1) • Rotavating (1) • Minimal cultivation (1) • Zero cultivation (1)	Accept any other suitable terms	3	307.03.04 AO1
Q2	2a. Water moves out of the plant cell. (1) 2b. Any **three** of the following up to a maximum of **three** marks. • Occurs when a cell is placed in a hypertonic solution. (1) • Water moves towards the higher concentration of solute. (1) • Cytoplasm loses water / shrinks. (1) • Cell membrane detaches from cell wall. (1)		4	307.02.01 AO1 AO2
Q3	Any **three** of the following up to a maximum of **two** marks. • Improves water retention (1) meaning more is available for physiological processes (1). • Maintains a stable temperature (1) which benefits root function (1). • Suppresses weeds (1) which reduces competition for resources (1). • Replenishes essential nutrients (1) which become available for physiological processes (1). • Encourages mycorrhizae (1) which improves root function / health (1).	Accept any other suitable answer.	6	307.03.04 AO2

Q4	Any **two** of the following up to a maximum of **two** marks. • Sexual (1) • Asexual (1)		2	307.02.02 AO1
Q5	Any **two** of the following up to a maximum of **four** marks. • Blows air around the engine (1) which acts as a cooling mechanism (1). • Holds the magneto (1) which times the spark in the engine (1). • Expels the heavy particles (1) which pre-cleans the air going into the engine (1). • Holds the palls (1) which connect to the starter mechanism (1).		4	350.02.02 AO2
Q6	Any **two** of the following up to a maximum of **six** marks. • Standard fell (1) for straight / balanced trees (1) where no additional force is needed (1). • Dog tooth cut (1) forward leaning trees (1) to prevent the chance of barber chair (1). • Split level cut (1) backward leaning trees (1) to allow insertion of a felling lever (1). • Danish / pie cut (1) for unpredictable trees (1) allows control if wind changes (1).		6	350.03.02 AO1 AO2
Q7	Any **three** of the following up to a maximum of **three** marks. • uneven sharpening (left/right hand) (1) • incorrect depth gauges (1) • bent or worn bar (1) • blocked air filter (1) • faulty on/off switch (1) • symptoms of poor or incorrect fuel mix (1) • lack of chain oil (1) • worn or slack chain (1) • worn anti-vibration mounts (1) • dirty chainsaw (1)		3	350.02.03 AO1
Q8	Any **three** of the following up to a maximum of **three** marks. • Large pine weevil (1) • Red band needle blight (1) • Great spruce bark beetle (1) • Phytophthora (various species) (1) • Deer (1)	Accept any other suitable answer and scientific names.	3	352.02.01 AO1

	• OPM (1) • Chalara (1) • Squirrels (1)			
Q9	**9a.** Any **three** of the following up to a maximum of **three** marks. • Sensors are placed around the trunk then tapped (1). • Sound waves are sent across tree trunk (1). • The speed of each sound wave is measured by the sensors (1). • A coloured read out gives an indication of wood density across the trunk (1). • This measurement is only relevant to the height of the sensors (1). **9b.** 1 mark for each benefit (up to max 2 marks) and limitation (max 4 marks) Advantages • Detailed information about internal condition of wood. (1) • Portable. (1) • Non-invasive. (1) • Can be uploaded into PC for inclusion in a report. (1) • Accurate and reliable. (1) Disadvantages • Does not pick up on certain rot types which make the wood hard or brittle. (1) • Limited use in the canopy. (1) • Limited use below the buttress area. (1) • Takes experienced operator to interpret readings. (1) • Expensive. (1)		7	352.04.01 AO1 AO2
Q10	Any **three** of the following up to a maximum of **six** marks. • Removing and destroying the nests during the daytime (1) in early summer (1) will kill the larvae in the nests (1). • Removing and destroying nests between late summer (1) is more likely to be more effective (1) as all of the larvae will have settled into the nest as pupae (1). • Pheromone traps can be used (1) to monitor numbers (1) and target trees for spraying (1). • Eggs can be counted (1) and hatching monitored (1) so that spraying happens at the right time (1).	Marks can be given for hoovering or removing nests manually	6	352.03.01 / 04.03 AO2

Q11	Named pest – 1 mark for any correct vertebrate pest. Relevant descriptions for a correct named vertebrate pest from this indicative content: 1 mark for each key point (max 1 marks) Key points: • Common host/host preference (1) • Mode of damage (eg browsing young shoots / compacting soil) 1) • Area affected (1) • Structural consequences (1) • Physiological consequences (1) 1 mark for each management method (max 2 marks) Management: • Felling (1) • Monolith(1) • Pruning (1 mark for each method) • Re-inspecting/monitoring (1) • Detailed inspection (eg aerial inspection/decay detection) (1) • Barriers (eg fencing / coppice cover) (1) • Pest control (e.g. shooting / trapping) (1)	Any other suitable answer provided.	4	352.01.03 / 03.01 AO1 AO2
Q12	Indicative content • Objectives. • Identification of the issues. • Solutions such as replanting with different stock or better vertebrate control. • Biosecurity/Sanitation (cleaning tools / clothing / boots). • Disturbance of habitats / protected species. • PPE. • Certification/safety of operators. • Risk assessment. • Site management. • Dealing with arisings (chipping / burning / leaf litter). • Working methods and equipment. • Access (work access/public access). • Legislation (licenses, permissions and protections). • Soil management. Any other relevant points.		12	0174.350.01.04, 0174.350.03.01, 0174.350.03.02, 0174.350.03.03, 0174.352.01.01, 0174.352.01.02, 0174.352.01.03, 0174.352.02.01, 0174.352.03.01, 0174.352.03.02, 0174.352.03.03, 0174.352.04.02 AO4

| | **Band 1: 1-4 marks**
Limited discussion with limited 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.

Band 2: 5-8 marks
Detailed discussion 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 usually correct.

Band 3: 9-12 marks
Comprehensive discussion with an extensive range and depth with regards to the factors to be considered. Consistent, relevant links made between factors to be considered.
To access the higher marks in the band, learners will use appropriate and accurate technical terms throughout. | | | |