Model Answers

Domain	Forestry > Forestry Foundation Skills			

Unit	22997	v4	Demonstrate knowledge of principles of commercial forestry	Level 2	Credits 5

Entry information

There are no pre-requisite requirements for this unit.

Assessment instructions

You will need to be able to show you can:

- Demonstrate knowledge of commercial forestry.
- Describe the positive factors affecting the quality and value of a stand of plantation trees.
- Demonstrate knowledge of the forestry industries and downstream processing of forestry products.
- Explain job prescriptions for forestry operations.
- Demonstrate knowledge of quality in a forestry operation.

Important information

- Carefully read through the rest of this Assessment so you know exactly what is expected.
- All evidence you provide for this assessment must be your own work.
- Clearly name and label all attached evidence.

What you need to do

?	**Question Set 1 – Commercial Forestry**
?	**Question Set 2 – Quality and Value of Plantation Trees**
?	**Question Set 3 – Downstream Processing**
?	**Question Set 4 – Job Prescriptions**
?	**Question Set 5 – Quality Control**

You can also attach additional evidence which shows you have the required skills and knowledge, e.g. photos, worksite documents, checklists, work samples, videos.

Unit standard information

Definitions

- *Accepted industry practice* – approved codes of practice and standardised procedures accepted by the wider forestry industry as examples of best practice.
- *Forestry operations* – include forest establishment, silviculture, harvesting, forest inventory, and forest and crew management.
- *Job prescription* – refers to any written instructions for the operation and may include maps, harvest plans, or cut plans.

Unit standard evidence map

Unit 22997 v4	Demonstrate knowledge of principles of commercial forestry	Level 2	Credits 5
Outcomes and Performance Criteria		**Evidence**	**No.**
Outcome 1: Demonstrate knowledge of commercial forestry.			
1.1	Common forestry terms are defined in accordance with accepted industry practice. Range: deciduous, evergreen, plantation, natural, exotic, indigenous, silviculture, harvesting, establishment, land preparation, mensuration, carbon planting.	Question Set 1	1
1.2	Māori practices, uses, and occupation of forests are identified, and impacts of these on commercial forest operations are described. Range: urupā/burial site, medicinal plants, food source habitats, wahi tapu/historic sites.	Question Set 1	2
1.3	New Zealand plantation species are identified as hardwood or softwood and their main uses are described in terms of final products. Range: may include but is not limited to – radiata pine, Douglas fir, eucalyptus species, cypress species; evidence of three species is required.	Question Set 1	3, 4
1.4	Plantation species are described in terms of percentage of total national plantation area. Range: radiata pine, Douglas fir, eucalyptus, cypress; evidence of three species is required	Question Set 1	5
1.5	Plantation species are compared in terms of length of growing cycle. Range: radiata pine, Douglas fir, eucalyptus, cypress; evidence of three species is required.	Question Set 1	6
Outcome 2: Identify and describe factors affecting the quality of a stand of plantation trees.			
2.1	Factors affecting the quality of the stand are identified and described in accordance with accepted industry practice.	Question Set 2	1

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	Range: planting methods, releasing, pruning, thinning.		

Outcome 3:	Demonstrate knowledge of the forest industry cycle and downstream processing of forestry products.		
3.1	The forest industry cycle is described in accordance with accepted industry practice. Range: land preparation, planting, releasing, pruning, thinning, harvesting, mensuration, processing.	Question Set 2 Question Set 3	1 1
3.2	Common markets and processing operations are identified for different log types in accordance with accepted industry practice. Range: log types include – pruned, unpruned; common markets include – export, domestic; common processing operations include – pulp, veneer, solid wood, post and pole.	Question Set 3	2

Outcome 4:	Explain job prescriptions for forestry operations.		
4.1	The purpose and content of job prescriptions for forestry operations are explained in accordance with accepted industry practice.	Question Set 4	1

Outcome 5:	Demonstrate knowledge of quality in a forestry operation.		
5.1	Poor performance in a forestry operation is described in terms of probable consequences. Range: consequences for the employer, consequences for the employee.	Question Set 5	1, 2
5.2	Quality control within a forestry operation is explained in accordance with accepted industry practice.	Question Set 5	3
5.3	Results from quality control measures are described in terms of the possible consequences for the forestry operation. Range: general consequence of getting a good result, general consequence of getting a bad result.	Question Set 5	4

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? Question Set 1 – Commercial Forestry

These questions are about forestry terms and plantation species used in commercial forestry.

Use your own words. Your assessor may ask you more questions to check your understanding.

1. Match each term with the correct definition. Write the number of the term in ☑ the box to the right of the definition.

Example answers

Terms			
1.	Deciduous Trees	2.	Evergreen trees
3.	Plantation Trees	4.	Natural forest
5.	Exotic tree species	6.	Indigenous tree species
7.	Silviculture	8.	Harvesting
9.	Establishment	10.	Land preparation
11.	Mensuration	12.	Carbon planting

Definitions	Term
Preparation of a site to enhance survival and growth rates of planted trees.	10
The management of trees to maximise growth and value through pruning and thinning.	7
A forest planted to produce wood and fibre.	3

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Trees that lose all their leaves once a year and then regrow them.	1
Trees that keep their leaves all year round.	2
Planting trees stores carbon.	12
Species that are native to the country where they are growing.	6
The land preparation and planting operations of a forest cycle.	9
The measurement of trees to plan the timing of forest operations.	11
The felling and extraction of mature trees.	8
A forest that is not planted by man.	4
An introduced species e.g. Radiata pine.	5

2. Describe an impact on commercial forest operations for each of the traditional ☑
Maori forest uses given below.

Assessor

This question supports PC 1.2.

Judgement statement

☐ The candidate correctly described an impact on commercial forest
operations for each of the traditional Maori forest uses.

Example answers

Traditional Maori use/practice	Impact on forest operations
Urupā / burial site	Impacts may include: type of harvesting system selected, location of roads and landings, planning of harvesting operations, stopping an operation if new site found, no go areas for machines, site not to be planted.
Medicinal plants	Impacts may include: limit or control access to site to avoid harm, no spraying of site, site not to be planted, planning of operations.
Food source habitats	Impacts may include: selection of harvesting system, leaving riparian strips around waterways, leaving areas unharvested for habitats, access to sites, planning of operations.

Wahi tapu / historic sites	Impacts may include: stopping an operation if new site found, selection of harvesting system, planning of operations, not planting a site, not spraying a site, access to sites.

3. For at least **three** of the plantation species tick which is either hardwood or softwood.

☑

Plantation species	Hardwood	Softwood
Radiata Pine		✓
Douglas Fir		✓
Eucalyptus	✓	
Cypress		✓

4. For at least **three** of the plantation species, describe **two** main end uses for each species in New Zealand.

☑

Plantation species	Main uses (2 required for each species)
Radiata Pine	Uses may include: structural timber, post, poles, panels, plywood, pulp, paper, furniture, mouldings, laminated veneer lumber (LVL), laminated beams, flooring.
Douglas Fir	Uses may include: structural timber, panels, paper, furniture, laminated beams, flooring.

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Eucalyptus	Uses may include: structural timber, poles, panels, plywood, pulp, paper, furniture, laminated beams, flooring.
Cypress	Uses may include: structural timber, panels, plywood, furniture, mouldings, laminated beams, flooring.

5. For at least **three** of the following species, state the percentage of total plantation area in New Zealand. ☑

Plantation species	Percentage of total plantation area
Radiata Pine	89%
Douglas Fir	6%
Eucalyptus	1%
Cypress	0.4%

6. Correctly state the length of growing cycle in years for each of the species listed below. ☑

Species	Length of growing cycle (years)
Radiata Pine	22 - 35 years (depending on site)
Douglas Fir	45 - 60 years (depending on site)

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Eucalyptus	15 – 45 years (depending on end use)
Cypress	30 - 45 years (especially macrocarpa)

Assessor – record key points from candidate's verbal answers as accurately and fully as possible.		
These answers were written by:	☐ Candidate	☐ Assessor

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❓ Question Set 2 – Quality of Plantation Trees

This question is about what affects the quality of plantation trees.

Use your own words. Your assessor may ask you more questions to check your understanding.

1. Describe **two** positive and **two** negative impacts on the quality of a stand for each factor. ☑

Planting methods	
Two positive impacts	**Two** negative impacts
• Good cultivation results in healthy strong tree. • Planting to correct depth and giving a positive pull-up will give roots correct alignment pointing downwards and ensures the tree is stable.	• Poor cultivation may mean roots do not get established. • Not planting to correct depth and not giving a positive pull-up could result in the roots not growing downwards and tree being unstable.
Thinning	
Two positive impacts	**Two** negative impacts
• Good selection maximises value of the final crop. • Quality thinning minimises damage to remaining trees. • Good thinning will produce even tree spacing.	• Poor selection reduces stand value. • Poor thinning practice can damage good trees. • Poor final spacing will produce an uneven stand with inconsistent tree growth.
Releasing	

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Two positive impacts	**Two** negative impacts
• Releasing on time will remove weeds competing with trees and allow maximum growth. • Correct chemical will remove competing weeds allowing maximum growth.	• If releasing left too late, trees may become suppressed by weeds. • Wrong chemical could result in tree dying or slow growth.

Pruning

Two positive impacts	**Two** negative impacts
• Good selection maximises tree quality and value. • Good pruning helps maintain tree health. • Pruning at the right time will maximise clear wood timber volume.	• Poor selection will reduce stand value. • Poor pruning can damage trees and affect tree health. • Pruning too late will reduce clear wood volume **or** pruning late will increase pruning cost.

Assessor – record key points from candidate's verbal answers as accurately and fully as possible.		
These answers were written by:	☐ Candidate	☐ Assessor

? Question Set 3 – Downstream Processing

These questions are about the industry cycle and downstream processing of forestry products.

Use your own words. Your assessor may ask you more questions to check your understanding.

Judgement statement

☐ Answers are in accordance with accepted industry practice.

1. In the forestry operation column, put each forestry operation listed below, in order of which they occur to make up the forest industry cycle. ☑

    Describe at least **one** activity involved in each operation.

    Forestry operations

    Mensuration   Processing   Land preparation   Harvesting

    ## Assessor

    This question supports PC 3.1.

    ## Judgement statements

    ☐ The candidate correctly puts each forest industry operation in correct order.

    ☐ The candidate correctly describes at least **one** activity involved in each operation.

    ## Example answers

Forestry operation	Activity
Land preparation	• Carried out at the start of the cycle, getting the land ready for planting trees e.g. ripping and ploughing soil. Done to improve survival and growth rates.
Mensuration	• The measurement of trees to provide forest owner with information to assist in decision making. Can be carried out before harvesting operations. This may involve measuring to check the quality of operations. • This can happen at various stages throughout the life cycle. • Can include post-harvest to check on recovery outcomes. • Processing can be in forest or off forest.
Harvesting	• Mature trees are felled and extracted from the forest to a processing site.

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Processing	• The transformation of logs into commercial wood products.

2.   For each log type, tick the market and processing option it is associated with.   ☑

Log type	Export	Domestic	Pulp	Veneer	Solid Wood	Post & pole
Pruned	☑	☑	☐	☑	☑	☐
Unpruned	☑	☑	☑	☑	☑	☑

Assessor – record key points from candidate's verbal answers as accurately and fully as possible.		
These answers were written by:	☐ Candidate	☐ Assessor

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❓ Question Set 4 – Job Prescriptions

This question is about the purpose and content of job prescriptions.

Use your own words. Your assessor may ask you more questions to check your understanding.

1. Correctly explain the purpose and content of a job prescription for forestry operations. ☑

    Assessor

    This question supports PC 4.1.

    Judgement statements

    ☐ The candidate correctly explains the purpose and content of a job prescription.

    ☐ Answers are in accordance with accepted industry practice.

    Example answers

Job prescription	Explanation
Purpose	• Provided by the forest owner to give instructions for the operation being carried out. The prescription outlines the quality requirements of the operation. It usually includes a map of the area.
Content (6 required)	A prescription should include: • Type of operation • Location of operation (forest, road, compartment, stand) • A map showing boundaries, hazards, sensitive areas • Any specific Health & Safety and environmental instructions • Start date of operation • Details of the operation – type of tree to plant, stocking, prune height, trees / ha to prune, selection criteria, quality expectations, quality control requirements, area to harvest.

Assessor – record key points from candidate's verbal answers as accurately and fully as possible.		
These answers were written by:	☐ Candidate	☐ Assessor

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❓ Question Set 5 – Quality Control

These questions are about quality control within a forestry operation.

Use your own words. Your assessor may ask you more questions to check your understanding.

Judgement statement

☐ Answers are in accordance with accepted industry practice.

1. Give **two** consequences for an employee of poor work performance. ☑

   Assessor

   This question supports PC 5.1.

   Judgement statement

   ☐ The candidate provides **two** consequences for an employee of poor work performance.

   Example answers

   - Rework
   - Loss of income
   - Loss of employment

2. Give **two** consequences for an employer of poor work performance. ☑

   Assessor

   This question supports PC 5.1.

   Judgement statement

   ☐ The candidate provides **two** consequences for an employer of poor work performance.

   Example answers

   - Loss of income (penalty payments)
   - Loss of contract

3. Explain quality control within a forestry operation. ☑

Assessor

This question supports PC 5.2.

Judgement statement

☐ The candidate correctly explains quality control within a forestry operation.

Example answers

Quality control (QC) is an operation carried out to assess the quality of a forestry activity.

QC is a system of checks / inspections made throughout the process to ensure the product is meeting the specification.

QC also alerts us to problems so that corrective action can be taken before product is lost or damaged.

It is important to carry out QC as part of daily operations to keep on top of any issues.

QC may be carried out after any forestry operation. QC will assess the quality against a set of standards given (usually in the job prescription). The results of the QC are recorded and may be used as a basis of payment for a job. A poor QC result may mean an area has to be reworked.

4. Describe the possible outcome (consequence) for the forestry operation of a good and bad result from quality control. ☑

Assessor

This question supports PC 5.3.

Judgement statement

☐ The candidate describes the possible outcome for the forestry operation of a good and bad result from quality control.

Example answers

Quality control result	Possible outcome
Good quality control result	• On-going work, bonus, improved stand quality and value.
Bad quality control result	• Reduced payment, rework, loss of contract, reduced stand quality and value.

Assessor – record key points from candidate's verbal answers as accurately and fully as possible.		
These answers were written by:	☐ Candidate	☐ Assessor

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