Basic Agricultural Production and Natural Resources Conservation Level-I

Based on Version-3 March 2018 OS.

Training Module –Learning Guide 27-32

Unit of Competence: Support Arboriculture Work

Module Title: Supporting Arboriculture Work

TTLM Code: AGR BAN1 M07 TTLM 0919v1

October 2019

Unit of Competence: Support Arboriculture Work

Module Title: Supporting Arboriculture Work

TTLM Code: AGR BAN1 M07 TTLM 0919v1

This module includes the following Learning Guides

LG 27: Prepare for ground support operations

LG Code: AGR BAN1 M07 LO1-LG-27

LG 28: Maintain a clear work site during operations

LG Code: AGR BAN1 M07 LO2-LG-28

LG 29: Provide ground support for tree climbers

LG Code: AGR BAN1 M07 LO3-LG-29

LG 30: Receive and process tree during operations

LG Code: AGR BAN1 M07 LO4-LG-30

LG 31: Clean up and store work place

LG Code: AGR BAN1 M07 LO5-LG-31

LG 32: Record and report support activities

LG Code: AGR BAN1 M07 LO6-LG-32

Instruction Sheet	Learning Guide # 27

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Receiving and clarifying instruction for ground support operation
- Identification of OHS hazards
- Selecting of tools, equipments and machinery
- Carry out pre-operational and safety checks.
- Selecting ,checking ,using and maintaining safety equipment and PPE

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, **upon completion of this Learning Guide, you will be able to**:

- Receive and clarify instruction for ground support operation.
- Identify of OHS hazards
- Select tools, equipments and machinery
- Carryout pre-operational and safety checks.
- Select ,check ,use and maintain safety equipment and PPE

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish each “Self-check respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to the next or “Operation Sheet
6. Do the “LAP test”

Information Sheet-1	Receiving and clarifying instruction for ground support operation

1.1 introductions

Arboriculture" means the management and care of amenity trees in the general community.

An **arborist**, or (less commonly) **arboriculture's**, is a professional in the practice of arboriculture, which is the cultivation, management, and study of individual trees, shrubs, vines, and other perennial woody plants. Arborists generally focus on the health and safety of individual plants and trees, rather than managing forests (the domains of Forestry and Silvicultural) or harvesting wood. An arborist's scope of work is therefore distinct from that of either a forester or a logger, though the professions share much in common.

Arborists gain qualifications to practice arboriculture in a variety of ways and some arborists are more qualified than others. Experience working safely and effectively in and around trees is essential. Arborists tend to specialize in one or more disciplines of arboriculture, such as diagnosis and treatment, climbing and pruning, cabling and lightning protection, or perhaps consultation and report writing. All these disciplines are related and some arborists are very well experienced in all areas of tree work, but not all arborists have the training or experience to properly practice every discipline.

1.1.1 Why we need arborist?

Trees in urban landscape settings are often subject to disturbances, whether human or natural, both above and below ground. They may require care to improve their chances of survival following damage from either biotic or abiotic causes. Arborists can provide appropriate solutions, such as pruning trees for health and good structure, for aesthetic reasons, and to permit people to walk under them (a technique often referred to as "crown raising"), or to keep them away from wires, fences and buildings (a technique referred to as "crown reduction"). Timing and methods of treatment depend on the species of tree and the purpose of the work. To determine the best practices, a thorough knowledge of local species and environments is essential.

1.2 Instructions

Are statement of command, a spoken or written statement of what must be done, especially delivered formally, with official authority, or as an order

Effective **Instructional** communication means to give and receive accurate, timely and relevant information and encourage opportunities for feedback. Hence, **Instructional** communication includes elements that would facilitate the effective sending and receiving of timely and accurate information and feedback..

> In ground support operations, there are informal methods of **Instructions**, such as conversations between workers, and formal methods such as memos from the management. These different methods allow information to reach the right people and help ground support operations towards its goals. In order to **receive and clarify instructions**, a person does need to be able to listen and speak clearly and present ideas in a logical, well ordered manner. However, another factor is also extremely important if **instruction** is to be effective. A good **receive** is a good listener and observer. Unless a person listens and observes to what is being said and, no **instructions** actually takes place.

In order to receive instructions, gather information and follow instructions correctly, you need to practice effective listening.

In the workplace, effective listening helps you to:-

- understand instructions clearly
- learn from others
- convey clear messages
- promote good listening in others (if you are prepared to listen to others, they will be prepared to listen to you)
- offer ideas and take part in discussions
- co-operate with others and work well in a team
- understand the ideas and suggestions of others
- respond in an appropriate manner

During your crew talk, discuss the following: Scope of the work to be done

- Location of work and circuit numbers
- Hazards involved (for example, voltage of any electrical conductors, uneven terrain, dangerous trees, or high traffic areas)
- Conditions that add to any of the hazards (for example, extreme weather)
- Procedures and equipment that will be used to perform the work safely and to avoid the identified hazards
- Placement of the established hazard areas or work zones
- Emergency plans (for example, the location of and route to the nearest hospital)
- Means of communication (for example, company radios, electrical utility radios, or cellular phones)
- Applicable rules and regulations (for example, WCB requirements and municipal by-laws)
- Traffic control procedures
- Additional information relevant to your specific worksite

Self-Check- 1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is arboriculture stands for? (1 point)
2. What are ground support operations in arboretum works? (2 point)
3. What is the purpose of ground support operations? (2 point)
4. What are work instructions for ground support operations? (2 point)
5. What is receiving work instructions for ground support operations refers to? (1 point)
6. From whom do you receive and to whom you are supposed to clarify work instructions? (2 point)
7. What tools, equipment and machinery will be used in arboretum ground support works? (4 point)

Note: **Satisfactory rating - 7 points and above** **Unsatisfactory - below 7 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Identification of OHS hazards2

Any number of hazards may prevent a tree from being climbed. The climbing team must perform a thorough tree hazard assessment before any tree is climbed. Remember, no tree is worth a human life. Hazards are **generally grouped into two categories**: **environmental hazards and tree hazards**. The following lists of potential hazards represent a starting point for the focus of a hazard tree assessment. In special situations where hazards cannot be mitigated, consider seeking additional help from specialists or receiving additional training before performing any work.

2.1 Environmental Hazards

The climbing team must assess the environmental hazards at each tree and monitor the weather throughout the day for changes that could make climbing more hazardous. Never climb a tree under any of the following conditions.

- ✓ The wind speed exceeds 25 mph or the wind is blowing in gusts. In light winds, try to keep your back to the wind. Does treetop work first, when conditions permit? If winds increase later, it may still be safe to work lower in the tree.
- ✓ It is not fully daylight. Visibility is especially important late in the day when fatigue is a factor. Do not start a tree climb that cannot be completed in full daylight.
- ✓ Air temperature is low enough to create an unsafe condition in your judgment. Be particularly aware of cold temperatures. Cold impairs dexterity, especially in the fingers, which can jeopardize your ability to accomplishtasks safely.
- ✓ A lightning storm is close. If you are in a tree when a lighting storm appears imminent, descend as quickly and safely as possible.
- ✓ A rainstorm is imminent. Wet branches are slippery. A wet rope may not be as strong as a dry one.
- ✓ A power line is close enough to the tree that you, your equipment, or the tree branches could come in contact with the power line. Consider any tree suspect if a power line is anywhere in the vicinity. DO NOT climb any tree that is closer than 10 feet from energized electrical conductors.

2.2 Tree Hazards

Check every tree thoroughly before the climb. Both team members should walk around the tree and assess it for potential hazards. Many hazards can be compensated for easily, allowing the tree to be climbed safely. Other trees have severe hazards that preclude them from being climbed unless a special need exists, the climber is properly trained and equipped, and any hazards are mitigated. When climbing any tree, if you encounter a hazard that cannot be mitigated, descend immediately.

The following hazards may prevent a tree from being climbed, if it is not possible to compensate for them.

- ✓ **Branch stubs or dead branches**. Never use branch stubs or dead branches for support. Remove deadbranches while ascending the tree if there is a chance they might be used inadvertently while descending.
- ✓ **Abnormally large amounts of branch mortality.** These conditions may indicate unsafe limbs and hiddenrot. This is mainly a problem in conifers.
- ✓ **The ingrown bark does not have the strength of wood**. The union is much weaker than one that has more wood. The included bark may also act as a wedge and force the branch union to separate.
- ✓ **Poor tree architecture**. Poor architecture is a growth pattern that indicates weakness or structural imbalance.Poor architecture often arises after many years of damage from storms, unusual growing conditions, improper pruning, topping, and other damage.
- ✓ **Forked boles and spiked top**. Unless the tree species naturally forks, do not climb above a forked bole. Treatany fork with suspicion, because the fork is potentially a weak point. Never climb into a dead or spiked top. Forks sometimes indicate an old, broken top.
- ✓ **Cankers**. A canker is a localized area on the stem or branch of a tree, where the bark is sunken or missing.Wounding or disease causes cankers. Stems are more likely to break near the canker.
- ✓ **Cracks.** Deep splits through the bark that extend into the wood of the tree are primarily a problem in deciduous trees. Cracks are extremely hazardous, because they indicate that the tree is failing. These trees should be evaluated by a person familiar with the species and climbed by certified climbers who are properly trained and equipped for the hazards associated with the job.
- ✓ **Decay.** A decaying tree can be prone to failure. Decay is primarily a problem in deciduous trees. The presenceof decay by itself does not indicate that the tree is hazardous.
- ✓ **Root problems.** Trees with root problems may fall without warning for any number or reasons, especially when the tree's leaves grow in summer, increasing the weight the tree must support. Besides decay, roots mayhave a number of other problems.
- ✓ **Animals in the tree.** Even small chipmunks can cause enough commotion to startle a climber and create a hazardous situation. It is best to return to the tree at a later date and climb it when the animal is not present or to designate the tree as unsafe to climb without special training and precautions.
- ✓ **Large birds nesting in the tree.** Be cautious of birds nesting in the tree that is being climbed or in nearby trees. Even small nesting birds can create hazardous situations when they are threatened.

2.3 Chainsaw hazards

Many serious and fatal injuries in the tree-care industry have involved chainsaws and other power saws. Before operating a chainsaw, make sure you understand the basic operating principles and techniques. Also, familiarize yourself with the operator's manual for the particular saw you are using.

The three main hazards you face when using a chainsaw are:

- **Cuts**
- **Noise**
- **Vibration**

✓ **Cuts**

- Cuts are the most common type of injury that results from chainsaw use. Chainsaw cuts can range from minor hand injuries when filing the chain to major amputations resulting from kickback. The most serious cuts result from kickback. A saw can kick back with surprising force in less than a second, leaving no time to react If you are poorly positioned, resulting injuries can be severe. Statistically, your "offside" is most likely to be injured when you use a chainsaw. For example, if you are right-handed, your left arm and left leg are most at risk.

✓ **Noise**

- Always wear earmuffs or earplugs when using a chainsaw. Not wearing proper hearing protection can lead to permanent hearing loss.

✓ **Vibration**

- Over time, chainsaw vibration can cause circulatory problems in your fingers. This can lead to a condition called white finger disease or Raynaud's syndrome. This condition causes the fingers to turn white and lose feeling when exposed to cold or vibration.

- To reduce your likelihood of developing this condition, follow these precautions: Make sure your saw has vibration dampening (rubber bushings between the handle and the engine section).
    - Keep the chain properly filed.
    - Do not hold the saw so tightly that your hands cramp.
    - Keep warm during work

General precautions

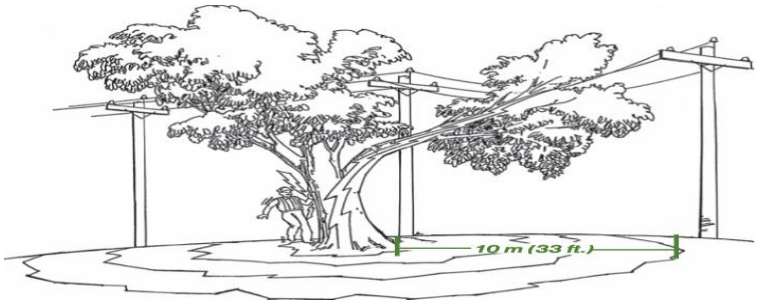
Workers must wear appropriate personal protective equipment when using a chainsaw:

- A hard hat
- Work gloves
- Appropriate CSA-approved footwear
- Safety glasses and a face screen
- Hearing protection
- Chainsaw pants

2.4 Electrical hazards

Many workers, including certified utility arborists, have been injured or died as a result of electrical contact. If you work around electrical conductors, you need to know how electricity works and how to work safely near it. Only certified utility arborists are permitted to perform utility line clearance work in close proximity to high-voltage energized conductors.

Why energized high-voltage systems are dangerous



If anything touches a high-voltage power line or if a power line falls on the ground, electricity will flow to the ground, energizing the tree or equipment and anything in contact with it. The surrounding ground may be extremely hazardous. The voltage gradually decreases from the point of contact until it reaches zero. Allow at least 10 m (33 ft.) for line voltages up to 138 kV (138,000 volts) and even greater distances for voltages above 138 kV.

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are safety procedures of working in trees? (3 point)
2. What are potential hazards of working in trees? (3 point)

Note: **Satisfactory rating – 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	**Selection of Tools, Equipment and Machinery**

3.1 Selecting Tools, Equipment and Machinery

During selection of tools, equipment and machineries for supporting arboricultural works, before hand you have to think about all individual type of activities that should be implemented and with this, what kind of instrument can help accomplish the work selected.

Based on these concepts arboricultural activities are of different types and exposing to risk on the workers. Because using sharp blades sows, climbing the tree, pollarding, activities will be practiced. Assuming the above conditions and better performance of the objective the following tools, equipments and machineries are selected below.

Axe: is used for tree cutting operations

Work wear: This cloth is a type of cloth which covers all the body part except the head and the fingers**.** It is used to protect the body from dirty.

Chain saws: is used for mechanical cutting of trees.


Pruning tools: these tools used for tree pruning activities**.**


Footwear: it is used to protect leg from sharpen and other damaging


Ladders: used for climbing to different tree branches


Gloves: which is made of leather or strong flexible plastic rubber, it used to cover fingers to protect from sharpen materials**.**



Rakes: this hand tools is used to rake out (collect) waste materials from greenery work grounds'.


Helmet: used for protecting head.


Harnesses: it is set of equipment used to protect the worker ting with branches of trees.


Ropes: It is protecting material used during climbing a tree.


Climbing Equipment (set): used to protect a worker from falling hazards.

Traffic control: this symbol or sign of OHS is used to show the work site workers are on at work.


Grass cutter: This machinery is used for cutting grass

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List, at least five (5) types of tools, equipment and machineries used for arboricultural work(5 points)

Note: **Satisfactory rating – 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-4	**Carryout pre-operational and safety checks**

4.1 Pre-operational and safety checks

Per-operational conditions that should be considered are selecting the required type of tools, equipments and machineries restoring and check them functional in relation to safety verification of tools, equipment and machineries. Here we have to have all the required materials with functional condition and its safety should be checked and demonstrated before starting any operations of arboricultural works. Because any mistakes done before operation may result in harm and injury.

1. Every employer shall nominate a competent person to be in charge of each operation. That person shall exercise such supervision as will ensure that the work is performed in a safe manner at all times. A competent person shall be nominated to take charge if it is necessary for this person to leave the operation.
2. Every employer shall exercise such supervisions will ensure that work is performed in a safe manner at all times.

Employers shall also ensure that all workers are properly instructed and trained in the work they are required to perform and the dangers or hazards involved in each operation.

a. Should any employer hire an experienced worker, the new employee shall (before being allowed to work unsupervised) be required to visually demonstrate to the employer or the person in charge that they have the competence to safely accomplish the work they may be required to perform. Workers holding availed and approved training qualification shall be considered experienced in those skills or special skills in which they have qualified.

b. Should an employer hire an inexperienced worker, the employer shall providethe instruction or training required and ensure close supervision until the employee demonstrates their competency to work safely in the job they are to perform.

Training while off the ground shall be on a one-to-one basis.

- ✓ All workers shall acquaint themselves with the relevant safety provisions of this code for each operation, and shall take all necessary precautions to ensure their own safety and the safety of others engaged in each particular operation.
- ✓ No person shall work in or visit an arboriculture operation while under the influence of drugs or alcohol.
- ✓ Where any operation becomes dangerous because of high winds, wet weather, poor visibility or other adverse conditions, the employer or person in charge shall suspend all such operations while such conditions exist. In emergency situations, work should be the minimum to make the situation safe.
- ✓ Before any work is carried out, or any climbing is done, proper inspections of the work area shall be carried out to identify hazards to the worker. These may be decay or rot, dead branches, suspended materials such as branches, interlocking branches or power lines, either within or close to the crown. All workers shall be given clear instructions on the work to be done and any hazards involved, to themselves, property or to the public.
- ✓ Unless training on a one-to-one basis or directly assisting in the operation, only one person shall normally be up a tree at one time. Generally at least two persons shall be employed at any time on tree work. However, specialists with competent experience who are properly equipped with the appropriate working and safety equipment, may work on their own on general tree work. Where any doubt exists as to their safety or wellbeing because of the nature of the work, or any hazard to the public, a further person shall be present.
- ✓ While working on their own in other circumstances, a worker's presence and welfare shall be ascertained at least once in any work period in which that person is so engaged and at the completion of each work period. As a guideline, this time should not exceed 2 hours.
- ✓ No person under the age of 15 shall work in any arboriculture operation. Work carried out by young persons shall not be beyond their physical capabilities, and they shall be fully trained or in training under adequate supervision while engaged in an arboriculture operation.
- ✓ No person under the age of 15 years shall, without the permission of the person in charge and unless under constant supervision of responsible person, be permitted in the vicinity of arboricultural operations. All vehicles used in conjunction with an arboriculture operation shall have a current Warrant of Fitness.
- ✓ All tree work sites shall be left safe at the end of each work period. At close of work for the day, provision must be made for the safety of all persons during darkness

4.2 Machinery

No machine shall be used unless it is:

a. Properly maintained in a sound and safe condition and inspected at least daily;
b. Suitable for the operation in capacity and design;
c. Operated by a competent person (or person training under adequate supervision);
d. Where appropriate, equipped with brakes that are capable of holding the machine

4.3 Ladder

Selecting a ladder

- Follow these guidelines when selecting a ladder for utility line clearance work:
- Do not use metal or other conductive ladders near an electrical hazard.
- Do not use ladders that appear to be unsafe, have broken or missing steps, or have cracked side rails or hardware.
- Do not paint wooden ladders. Paint hides cracks, breaks, and other defects.

Using a ladder

Follow these guidelines when using a ladder:

- Inspect the ladder before use.
- Place the ladder base on firm footing at a distance from the tree base equal to one-quarter the length of the ladder itself (a 4:1 ratio).
- Secure the ladder base using cleats, metal points, or non-skid feet to prevent slipping.
- Tie the ladder to the tree to keep the ladder from slipping sideways.
- Use both hands when climbing the ladder.
- Use the ladder according to the manufacturer's specifications.
- Maintain limits of approach when using the ladder near conductors. Do not position the ladder horizontally to support weight. Do not reach out from the ladder more than an arm's length.
- Never stand on the top two rungs of the ladder unless you are tied in to the tree.
- Never lean the ladder against wires for support or in a position where it could fall.
- Maintain three-point contact on the ladder (two hands and one foot or two feet and one hand).

4.4 Hand tools

Hand saws, pole saws, and pruners are the main hand tools used for utility line clearance work. Use all tools according to the manufacturer's guidelines. Do not use damaged or defective tools.

a. Hand saws

When using a hand saw, follow these safety precautions:

- Avoid "bulling" the saw through the wood. Bulling causes binding and uses a great deal of energy. Instead, keep the saw straight and

apply slight downward pressure on it. This will keep the saw from binding or jumping out of the wood.

- Always keep your free hand away from the saw's cutting area. Keep your legs out of the saw's path.
- Do not use the saw's cutting edge to knock off branches. This will damage the teeth and dull the blade.
- Do not bend, drop, or throw the saw.
- Keep the saw stored in a scabbard when you are not using it.

b. Pole saws and pruners

When using a pole saw or pruner, follow these safety precautions:

- Always be aware of the tool's position relative to any electrical conductor. This applies not only to the sawing or cutting end of the tool but to its opposite end as well. Do not violate limits of approach when using pole saws or pruners.
- While working aloft, hang the pole securely in the tree within an arm's length when you are not using it. Keep the tool's sharp edges facing away from you.Never hang pole saws or pruners on conductors or cables of any kind.
- Never pick up a pruner with your fingers in the cutting head. The cutting head can be accidentally activated if caught on a limb or other object.
- Store pole saws where they won't injure people passing the truck.
- Do not store blades loosely with other tools or ropes.

Self-Check -4	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What pre-operational and **safety** checks on tools, equipment and machinery would be conducted in ground support operations? (4 point)

Note: **Satisfactory rating - 2 points and above** **Unsatisfactory – below 2 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet- 5	Selecting ,checking ,using and maintaining safety equipment and PPE

5.1 Personal protective equipment

When performing utility line clearance work, protect yourself from hazards by wearing personal protective equipment such as a hard hat and safety glasses. Essential personal protective equipment for utility arborists, apprentice utility arborists, and ground personnel includes:

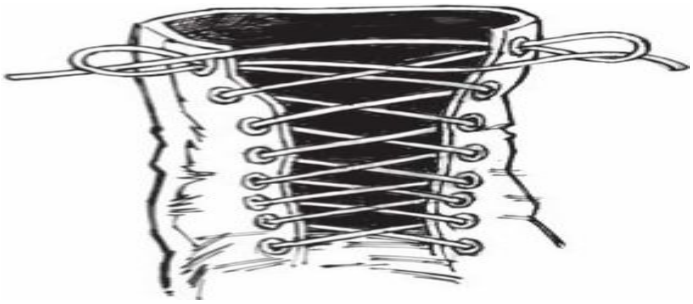
- A hard hat (Head protection)
    - Safety-toe work boots
    - Work gloves
    - Earmuffs or earplugs
    - Safety glasses and a visor
    - High-visibility apparel (when required)
    - Chainsaw pants or chaps
    - A whistle (or other communications equipment)

Protective clothing, equipment and appliances are complementary to, not a substitute for, full instruction, sufficient training and adequate supervision.

5.1 .1Head protection

Wear a *CSA-approved hard hat when performing utility line clearance work*

5.1 .2 Foot protection

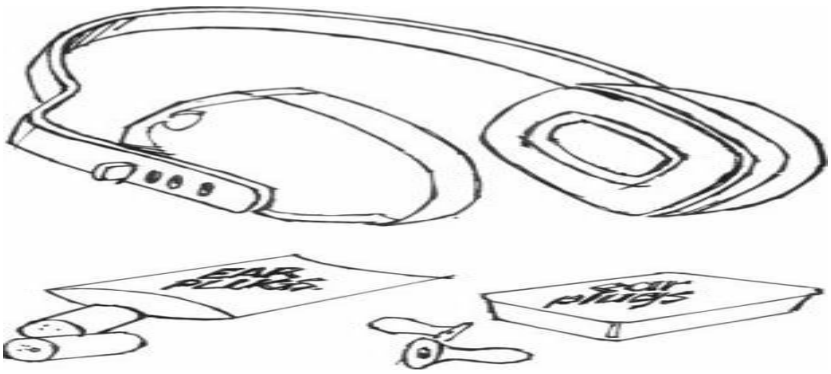


Use the "logger's tie" to prevent boot laces from untying.

5.1 .3 Hand protection

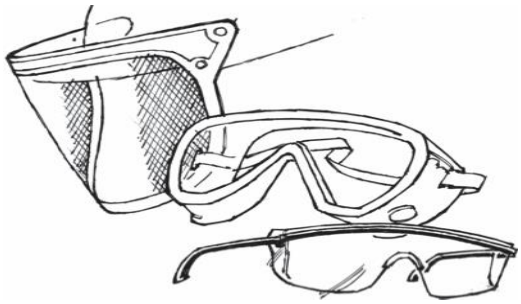
Nylon-mesh gloves protect against cuts and provide good grip.

5.1 .4Hearing protection



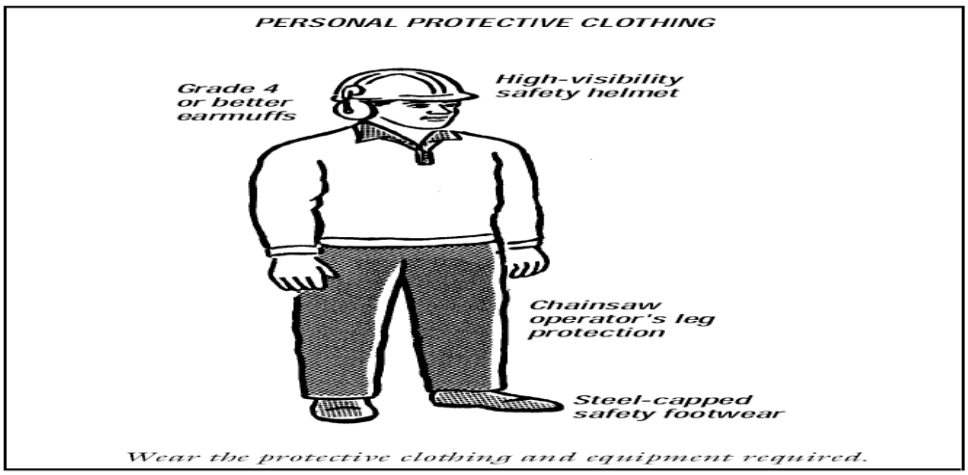
Wear appropriate earplugs or earmuffs when using a chainsaw.

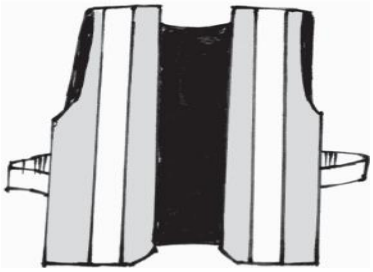
5.1 .5 Eye and face protection



Wear appropriate safety glasses for utility line clearance work. Wear safety glasses and a wire visor for chipping.

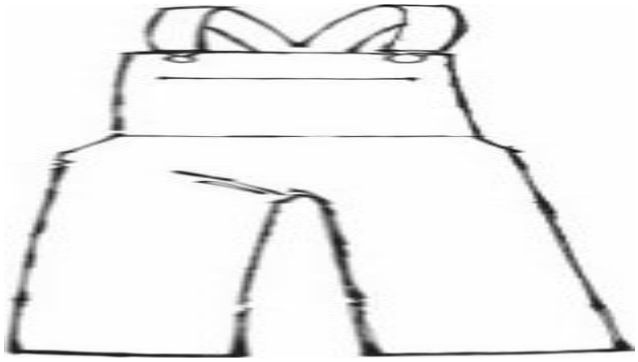
5.1 .6 Clothing





5.1 .7 Leg protection

Wear chainsaw pants or chaps that meet the current WCB standard to prevent cuts when using a chainsaw. Cotton or wool material is better than nylon, which is moderately flammable and will melt while burning. Protective padding should extend from the top of the thigh to below the top of the boot and cover the back of the calf. Do not sew or stitch protective padding. Replace pads that are matted or torn. Suspenders are recommended for use with chainsaw pants because they keep the pants in a comfortable position, even when the pants are rain-soaked. To allow for freedom of movement, keep the waistband and legs of chainsaw pants loose.



Chainsaw pants offer better protection than chaps.

5.2 Communications equipment

When working away from a vehicle, carry a whistle, two-way radio, or other means of summoning help. A whistle is the easiest, cheapest, and most commonly used emergency communications device. Pin it within easy reach of your mouth (for example, to your suspenders) for easy access. Use it only for emergencies

Self-Check- 5	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are safety equipment and personal protective equipment (PPE)? (2 point)

2. When and how do you select, check, use and maintain suitable **safety** equipment and personal protective equipment (PPE)? (4 point)

Note: **Satisfactory rating - 3 points and above** **Unsatisfactory – below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Operation Sheet -1	Prepare For Ground Support Operations

Purpose: at the end of this lesson the trainees will be able to:-

- ✓ Prepare For Ground Support Operations

Tools and Equipment: Axe, pruning tools, foot wear, gloves, rakes, traffic control…

Machinery: Chainsaw…

General procedures that should be followed by the workers:

Step-1: Select the work unit site

Step-2: Identify the trees of arboricultural practices needy

Step-3: Identify tools and equipments required for the accomplishment of the activity to be done.

Step-4: prepare climbing tools and its accesses perfectly and checking.

Step-5: Climbing

Step-6: Maintain clean work site during operation

Step-7: Start operation

Step-8: Continue communication and observing the above one with ground person on facilitating send and receive processes of required materials

Step-9: Descend down and finish work.

LAP Test	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 2-3 hours.

Task 1: Show or demonstrate procedures for Ground Support Operations.

Instruction Sheet	Learning Guide # 28

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Keeping away persons not involved in the work operation
- Placing rescue equipments within easy access.
- Keeping drop zones free from debris.

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Keep away persons not involved in the work operation
- Place rescue equipments within easy access.
- Keep drop zones free from debris.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish each “Self-check respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to the next or “Operation Sheet
6. Do the “LAP test”

Information Sheet-1	Keeping away persons not involved in the work operation

1.1 Hazard areas

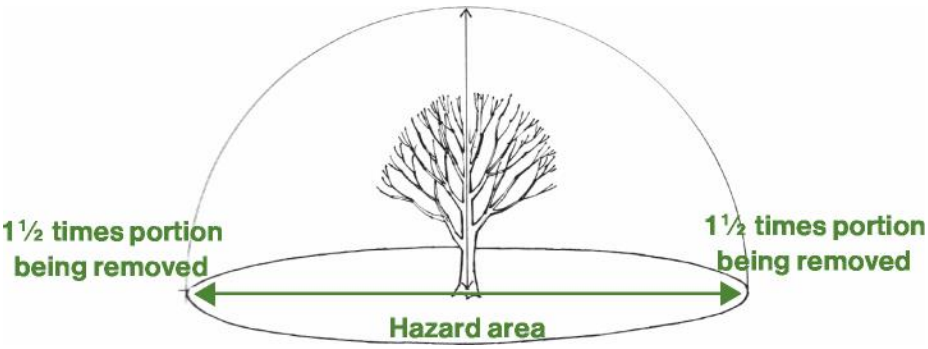
Utility arborists must consider two variables when establishing a hazard area:

- The distance that the hazard area will extend outward from the base of the tree — a minimum of either $1^1/2$ or 2 times the length of the piece being removed (see below)
- The direction from the base of the tree — either a semicircle (180° or less) or a complete circle (360°) around the tree

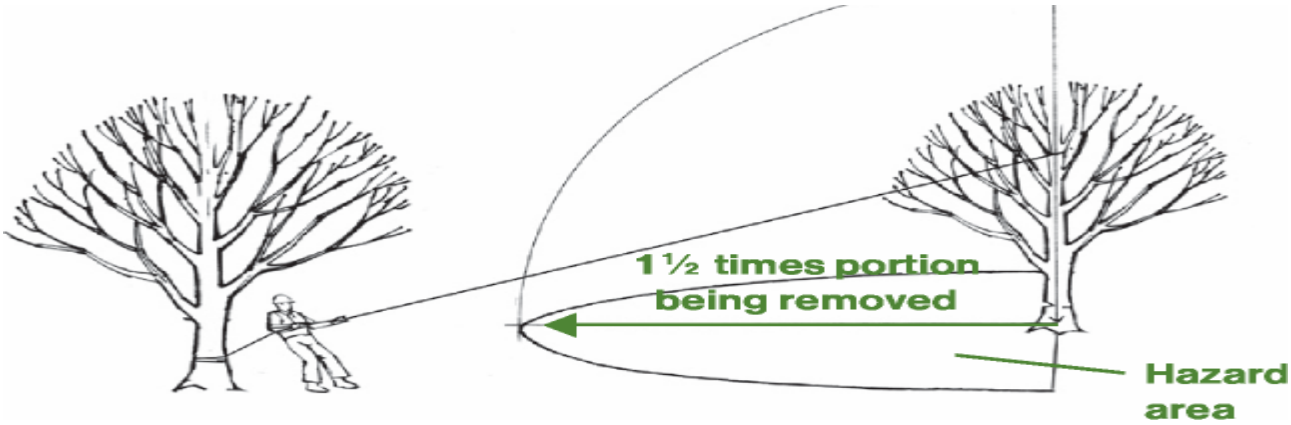
The size and shape of the hazard area will depend on the hazards present, the type of work you are doing, and the process you are using. Some trees require large hazard areas that completely encircle the tree, while other trees require relatively small hazard areas in only a portion of the area below the tree.

The normal standard under the Occupational Health and Safety Regulation for falling trees is that all workers other than the faller must be clear of the hazard area extending outward at least 2 times the height of the tree being felled, 360° around the base of the tree. This requirement is generally practicable for production falling and for land or right-of-way clearing.

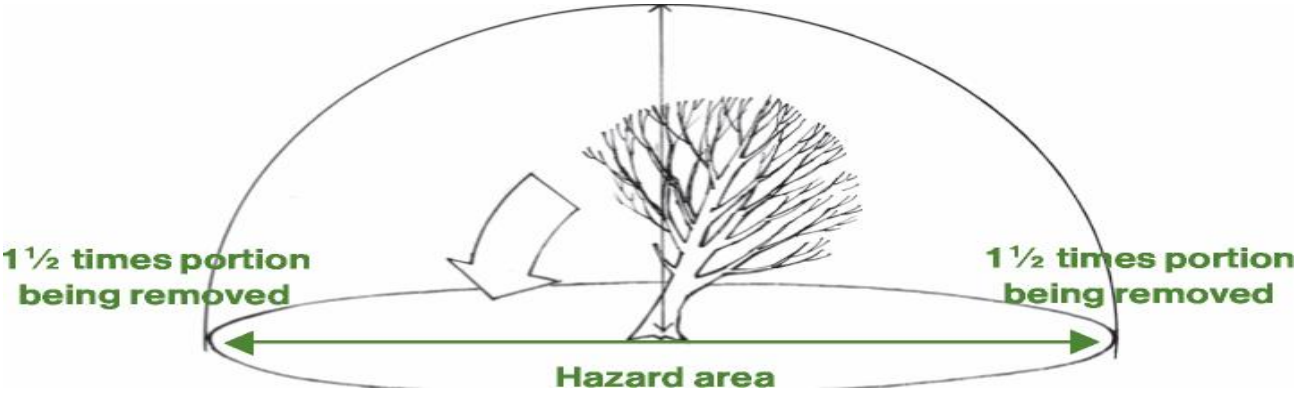
Fallers should always plan escape routes when falling trees. The best escape routes are usually 45° away from the tree and the intended direction of the fall.



Plumb trees without a ground slope generally require a hazard area that extends outward $1^1/2$ times the length of the portion of tree being removed. If you do not use rigging to control the direction of fall, the hazard area must extend 360° around the base of the tree.

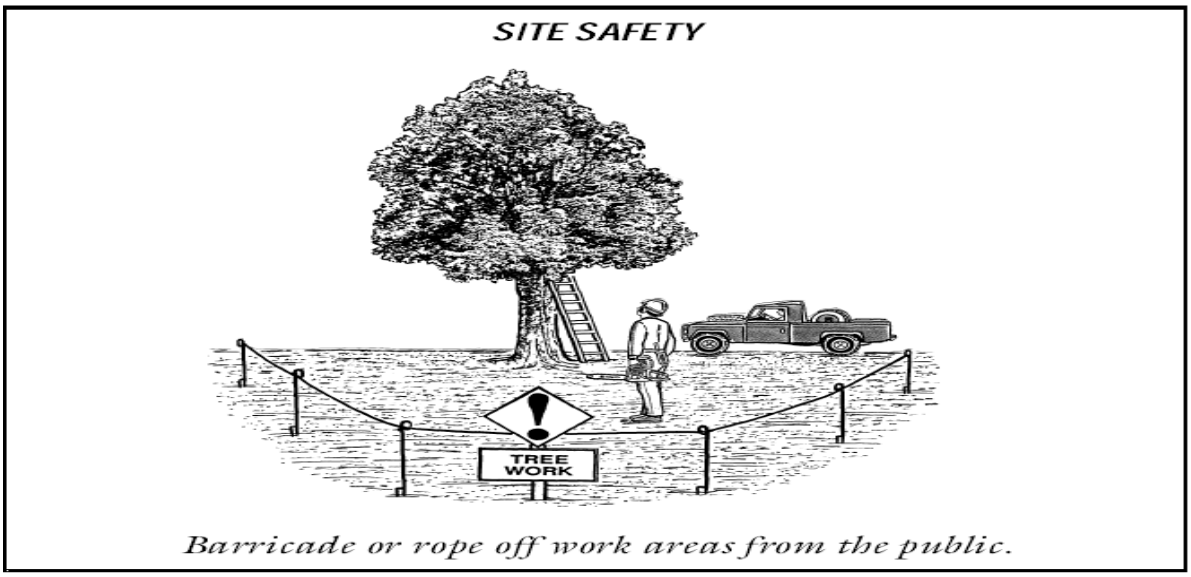


If you use rigging when falling a plumb tree without a ground slope, you can limit the hazard area to a 180° semicircle in the intended direction of tree fall.



Trees leaning away from the direction of fall require a hazard area 360° around the base of the tree, even when you are using rigging. The hazard area must extend outward at least 1 1/2 times the length of the portion of tree being removed.

Warn other workers before dropping a limb from a tree. Yell "Clear!" then wait for workers on the ground to respond "All clear!" before dropping the limb.



Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Why we are conducting keeping away persons those not participating in arboricultural operation from work place of tree pruning?(3 points)
2. What are special considerations that should be understood about store of arboricultural equipments? (3 points)

Note: **Satisfactory rating - 3 points and above** **Unsatisfactory - below 3points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Placing rescue equipments within easy access

2.1 Rescue Equipment

Equipment needed to aid an incapacitated climber in a tree consists of the basic equipment, plus additional rescue and first-aid items.

Place rescue equipment in a pack reserved for rescue purposes only. Plainly mark the pack for this use. List the pack's contents on a tag or include a contents list inside the pack. Before each assignment, make sure all the items are in the pack and that they are in good condition. This rescue gear must be readily available during all climbing operations.

2.1.1 Recommended Items for the Rescue Pack

1. One 10-unit (minimum) first-aid kit that includes a body fluid barrier kit.
2. Flashlight and extra batteries.
3. Roll of brightly colored flagging.
4. Waterproof matches.
5. Two blankets sealed in plastic. These can be used for treating shock or for splinting.
6. Backboard (collapsible, if available).
7. Long and short splints (in addition to those that may be in the first-aid kit).
8. Cervical collars (two adjustable collars or a range of sizes). These are to be used only by trained personnel.
9. Eye wash or a bottle of sterile water to wash out the eyes (in addition to materials that may be in the first-aid kit).
10. Two rescue pulleys (minimum).
11. Four locking carabineers (minimum).
12. Several 10- to 12-foot lengths of webbing or rope, plus 50 feet of 1-inch tubular webbing or static 11-millimeter rope
13. Heavy-duty metal shears or a small hacksaw for cutting jammed carabineers or steel-core lanyards.
14. A rope suitable for rescue, if such a rope is not included with basic climbing equipment

This part provides first aid and rescue procedures to use in emergency situations in which a worker is injured. This part includes the following sections:

- First aid
- Aerial rescue

First aid

When workers are injured on the job, first aid can help reduce the impact of their injuries, prevent further injuries from occurring, and keep them alive until help arrives.

Aerial rescue

If a member of your crew is injured while in a tree or aerial lift, you may need to use aerial-rescue techniques to retrieve the worker so first aid can be administered. Only workers trained in aerial rescue should attempt aerial rescue.

Employers must document aerial-rescue techniques and must train workers in these techniques. All necessary rescue equipment must be available at the worksite.

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. How do you define the word rescue and its equipment in arboriculture operation? (6 points)

Note: **Satisfactory rating - 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	Keeping drop zones free from debris

3.**1Drop zones**

- ✓ A rope should never be stepped on, driven over, or have other equipment piled on it. This can grind abrasive dirt into the fibers or abrade or cut the outside surface. Sharp or heavy objects can cause unseen damage that may cause unexpected failure.
- ✓ New rope should never be washed, rinsed, or soaked before initial use because of the naturally slippery quality that makes it soft and supple. The fibers adjust favorably, depending on use. Washing a new rope tends to remove the natural slipperiness, causing it to become dry and brittle, thereby shortening its life.
- ✓ Rope should only be washed when very dirty. Wash ropes to keep dirt from working its way inside, where it can abrade and weaken internal fibers.
- ✓ When a rope must be washed, check the manufacturer's instructions. If acceptable, first soak pitchy areas with hand cleaner, then wash by hand or in a front-loading machine with mild detergent in warm water. Drip dry out of direct sunlight; never machine dry.
- ✓ Proper storage maximizes a rope's useful life. Store rope in a cool, dark, dry place. Exposure to direct sunlight rapidly deteriorates rope fibers. Untie all knots before storage and never hang a rope over a nail, small diameter peg, or hook. Ideally, rope should be coiled and stored in a rope bag that can be closed tightly.

- ✓ Never wash, rinse, or soak new webbing before initial use. New webbing is naturally slippery, which makes it soft and supple. Washing new webbing tends to remove the natural slipperiness, causing it to become dry and brittle and shortening its life.
- ✓ Dirt will damage webbing over time through abrasion. When necessary, wash dirty webbing in warm water with mild detergent to reduce the likelihood of abrasion.
- ✓ Avoid heat and direct sunlight when drying webbing.
- ✓ Before storing, remove knots if webbing is to be retied in different configurations in the future. If webbing is tied in a permanent configuration (such as safety straps and etriers), leave knots in place to help them "set."
- ✓ Store webbing in a cool, dark, dry place.
- ✓ Never store webbing where it can be stepped on or have equipment piled on top of it; this can cause internal wear by grinding abrasive dirt into the fibers or direct damage by abrasion or cutting.
- ✓ Examine fibers closely for wear. Retire webbing before 30 percent of the surface fibers are worn at any place along the webbing.
- ✓ Keep webbing used for life support separated from utility cordage. Mark utility cordage so it can be distinguished from material used for life support.
- ✓ Never use life-support webbing for vehicle towing or subject it to other such abuse.
- ✓ Store ladders indoors in a dry location, either on a flat surface or standing nearly vertical with no weight on the span.
- ✓ Remove dirt and pitch after each use.

- ✓ Keep electrical warnings on metal ladders legible.
- ✓ Oil the bearing points on metal tripod ladders periodically.
- ✓ Before each use, inspect ladders for defective parts and for cuts, dents, bends, or burrs on the rungs and rails.
- ✓ Inspect all screws, nuts, and bolts to ensure that they are securely tightened before use. Inspect rivets that hold the upright prongs on sectional ladders.

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is drop zone? (5 points)

Note: **Satisfactory rating – 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Instruction Sheet	Learning Guide # 29

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Maintaining clear communication between ground crew and operator
- Receiving and clarifying non-verbal signs of communications
- Raising and lowering equipments for climbers
- Performing rope handling techniques

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Maintain clear communication between ground crew and operator
- Receive and clarifying non-verbal signs of communications
- Raise and lower equipments for climbers
- Perform rope handling techniques

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish each “Self-check respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to the next or “Operation Sheet
6. Do the “LAP test”

Information Sheet-1	**Maintaining clear communication between ground crew and operator**

1.1 Tips for better workplace communication

Do you think communication is mostly done through words? What if you found out that communication is actually 70% non-verbal? That means it's your body language including your movements, eyes and even hands that say things more often and louder than your mouth. The ability to communicate with clarity and effectiveness is an imperative skill for organizational leaders. Here are important ways to make your communication more productive and effective

1. Provide clear information

Passing information from one person to the next is the purpose of workplace communication. If your communication isn't complete and accurate, it can cause confusion instead of clarity. Carefully plan your communication to be sure you are passing along the correct information and the right amount so those you are communicating with understand what you want to say.

2. Communicate honestly

People know when something isn't adding up. If you try to communicate something that isn't totally true and honest it will eventually be revealed. It's difficult to maintain dishonest communication in the workplace (or anywhere else) because it gets too complicated to hold all of the stories together. Instead of saying things that aren't totally true, just say less. Speak the truth and leave the rest for later or don't say it at all if it's not true and honest.

3. Bring non-verbal and verbal communication together

Remember, communication is both non-verbal and verbal. Sometimes, a person says one thing but acts in a different way. For instance, it's not uncommon to hear someone say "Yes" but shake his head in a horizontally which indicates "No" in a non-verbal way (in the US culture that is). This sends mixed messages. Bring your communication together by being conscious that your non-verbal and verbal messages are in agreement.

4.Listen

Listening is an important communication skill that is seldom done well. In order to actually share information with another person, you have to hear what is being communicated. This way you can respond to the actual message. Most conflict stems from poor listening. To help learn how to listen well, take time to repeat what you here from the other person. Simply

paraphrase what you heard to verify accuracy. This will cut down on conflict and vastly increase the effectiveness of your communications.

5. Ask questions

Asking questions is a good way to verify what you hear so you respond appropriately. Questions let the other person have the chance to clarify what they said. It also allows you to hear a response in a different way or just hear it again in order to be sure of what you heard. Make sure your questions relate specifically to what is being said. Don't change the conversation by bringing in a question on a totally different matter. Also use questions to gather quick additional points that help you understand the conversation.

6. Let others talk

Have you ever been stuck in a meeting when only one person did all of the talking? Some people even go so far as to ask a question and provide the answer? Few things are as irritating as having a person dominate a conversation. A conversation is a two way event at a minimum. Remember to let the others speak. Even if you have a lot to say, dominating a conversation becomes a monologue, not a conversation. Solicit opinions, ask for response, and bring others into the conversation. Sometimes, all it takes is to be quiet for a moment.

7. Engage in Difficult Conversations When necessary

Do you ever avoid saying what needs to be said or avoid a difficult conversation altogether? Not saying something doesn't make a situation go away. Instead, things usually just get worse. Not communicating can also cause more stress and trauma in a situation. Instead of avoiding difficult communications, sit down and plan out what you're going to say. Actually write down the important points in order to feel comfortable about what you have to say. Make sure the tone you use is open and non-confrontational in order to encourage feedback from the other person. Conversations aren't always fun but getting the words out will relieve the tension and let the matter move forward.

Obviously there's a lot more that can be said about communications in the workplace. Starting with these top seven tips provides a good beginning to making you a better workplace communicator. Remember, practice makes perfect. Use daily opportunities to practice your communication skills until you feel comfortable in any situation that arises in the organization.

1.2 Improving communication in the workplace

1 Set a shared vision: All teams need to have a clearly defined goal, objective or vision defined by their managers. The goal should be communicated to all team members and referred back to over the duration of projects to ensure the team are all working towards the same objective. These objectives may relate back to the company's own innovation

strategy or specific products lines so are crucial to the overall success of the company's output.

2 **Align team expectations to goals:** Discussions need to be had with team members as a group or individually to align expectations with regard to what needs to be done on the project, how it will be done, by whom and by when. These discussions help reduce the chances of wrong assumptions being established, especially early on. Discussions should be performed as part of your project change management procedure to make sure everyone has a clear understanding of what tasks and activities are expected of them when changes to plans occur.

3 **Communicate clearly, regularly and equally:** These are fundamental communication skills in the workplace no matter what communication channel is used. All messages need to be clear in order to ensure there is no ambiguity or lack of understanding. Regular communications (by phone, e-mail, reports, etc.) ensures that constant progress updates are be maintained and that issues/risks are rapidly being raised. Effective communication in the workplace is made more difficult with remote teams as global team members will gain more information. For remote team members to feel that they are a strong part of the team, they should be communicated with as equally as local team members. Be sensitive to understanding what is communication in workplace environments like when team members are not in the same office

4 **Use synchronous/asynchronous mediums appropriately:** Synchronous communication methods (e.g. telephone, video conferences/audio conferences, real-time chat) provide rapid feedback and two-way discussions that are ideal for reducing ambiguity, debating subjects and establishing assumptions and goals. Asynchronous communications (e.g. e-mail, voice-mail or collaborative team rooms) are ideal for informative messages such as updates, reports, etc. but not ideal when time is pressing since you may not receive a response straightaway. You really need to become aware of what communication techniques are important and applicable for the type of message you're sending (e.g. e-mails are not suited to debates on issues – this requires a phone call or IM chat).

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are the advantages of communication link between ground crew and the operator? (5 points)

Note: **Satisfactory rating - 3points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Receiving and clarifying non-verbal signs of communications

2.1 Non-verbal signs of communications

While verbal communication is much studied and is the focus of much applied attention in areas ranging from journalism to governance to entertainment, the fact is that human beings communicate more through nonverbal means. Some estimates are that so-called body language accounts for 65, 70, even 90 percent of human communication. Using the 70-percent figure for body language, the voice accounts for another 20 percent or so, and specific words only about 10 percent. Research conclusions may vary a bit, but the consensus is clear: Nonverbal communication is hugely important in human interaction.

Nonverbal communication: is usually understood as the process of communication through sending and receiving wordless (mostly visual) messages between people. Messages can be communicated through gestures and touch, by body language or posture, by facial expression and eye contact. Nonverbal messages could also be communicated through material exponential; meaning, objects or artifacts (such as clothing, hairstyles or architecture). Speech contains nonverbal elements known as paralanguage, including voice quality, rate, pitch, volume, and speaking style, as well prosodic features such as rhythm, intonation, and stress. Likewise, written texts have nonverbal elements such as handwriting style, spatial arrangement of words, or the physical layout of a page. However, much of the study of nonverbal communication has focused on face-to-face interaction, where it can be classified into three principal areas: environmental conditions where communication takes place, physical characteristics of the communicators, and behaviors of communicators during interaction.

The saying, "Actions speak louder than words," is one way to think about nonverbal communication. Nonverbal communication is an unspoken and unwritten process that sends a message. It is talking without speaking.

Self-Check- 2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is non-verbal communication? (5 points)

Note: **Satisfactory rating - 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet- 3	Raising and lowering equipments for climbers

3.1Safe working procedures for the climber

Climbing work is not banned by the Regulations (the rum ours are wrong), however all tree work involving work at height should be properly planned and appropriate work equipment selected to make it as safe as possible. In addition to these general measures, tree climbing using a rope and harness has to meet specific requirements set out in schedule. Climbing work with a personal fall protection system – i.e. ropes and harness - can only be undertaken if:

- a risk assessment has to be demonstrated so as to work can be performed safely while using that system;
- the use of other, safer work equipment (e.g. mobile elevating work platforms) is not justified;
- The user and sufficient number of persons have received adequate training specific to the operation envisaged, including rescue techniques.

The main climbing techniques in tree work are either work positioning (e.g. changeover climbing using a harness, friction knot and climbing line), or rope access and positioning (e.g. foot locking). Within the tree, where possible, the system should be securely attached to two load bearing anchor points. Each anchor point should be strong enough to support the climber, work equipment and any foreseeable loading.

3.2 Karabiner loading

- Ensure karabiners are loaded correctly. It is essential that they are kept in correct alignment. Secure climbing line and friction cord to the karabiner so that it is unlikely to misalign or come into contact with the gate mechanism. Use an appropriate rope termination and/or a rope holding accessory such as a plastic fast or rubber sleeve.

- Karabiners should not be ‘chain linked’ as this can easily lead to twisting and associated pressure on the gate.
- Inspect karabiners carefully and maintain before and after use.
- Monitor karabiners during use. The gate mechanism is susceptible to dirt buildup that can affect its function.
- Clean the mechanism using soapy water followed by flushing with compressed air after drying. Lubrication may also be necessary (see manufacturer’s recommendations).
- Check the mechanism function by opening the gate 10 mm and applying light rotational pressure to the barrel to bias the mechanism towards the karabiner nose. Carefully rest the gate onto the karabiner nose and release. The gate should return automatically to the locking position.

NB The gate must function correctly and reliably before use.

3.3 Ladders

- Improper use of ladders is a major work hazard. The most common causes of accidents are ascending or
- Descending improperly, failure to secure the ladder, holding objects while ascending or descending or
- Structural failure of the ladder.
- Ladders made of metal or other electrically conductive material shall not be used in the vicinity of power lines.

CARE AND MAINTENANCE

- Never paint a ladder as painting can obscure defects.
- Inspect wooden ladders regularly for loose or cracked rungs or stiles. Make sure nuts and bolts are tight, locks work correctly, extension locks work as intended and rope and other accessories are properly fixed and in good condition. Lubricate any moving parts.
- Metal ladders should be checked regularly for metal failure or corrosion. Particular attention should be given to the junction of the stiles and the rungs, interlocking joints and chains and pins. Ensure that style plugs, if fitted, are tight.
- Store ladders where they are protected from the weather, in a dry location and away from excessive heat.
- Wooden ladders stored horizontally shall be supported at both ends and in the middle to prevent sag. Never store materials on ladders.

3.4 Using climbing irons

- When using climbing irons, the climber should be secured to the tree with a climbing rope and/or a lanyard. Climbers using a chainsaw on an upright stem to which their primary anchor is attached should use a steel core adjustable flip line positioned above their climbing line.

- Only connect the climbing line and/or adjustable lanyard/flip line to approved climbing attachment points on the harness. If attached centrally, ensure that the karabiner/s is not subjected to inappropriate loading. When using the lanyard from the side Dryings, take care to avoid the karabiner gates contacting objects and ‘rolling’ open.
- Check that the climbing line and the steel core adjustable flip line are not at risk of being cut by the chainsaw.

Peruse inspection

- Climbers should check all equipment for excessive wear, damage or defects before use.
- Interim inspections of equipment subject to high levels of wear and tear should be recorded, and climbing equipment should be 'thoroughly examined' by a 'competent person' every six months (see 'Further reading' for more information).
- Withdraw defective equipment from use and destroy it, or mark it in such a way that it cannot be used by mistake.
- Keep safety equipment and protective clothing clear of cutting tools, fuel, chemicals and any other potential hazards at all times while on site, and during storage or transit to avoid damage through contamination.

Storage

- Check, maintain and store all tree climbing equipment in accordance with manufacturer's instructions. Dry wet equipment thoroughly before storage, eg in a well-ventilated environment away from any direct heat source.

3.5 Responsibilities of ground staff

- Plan the job with the climber(s) before the work starts and be aware of the task(s) involved. On busy sites consider dedicating a specific member of the ground staff to each climber.
- Maintain effective communication with climbers at all times.
- Maintain concentration and watch the climbers. Anticipate their needs, passing up tools and other equipment, when required.
- Keep climbing and work ropes on the ground free of knots, kinks, tangles, branch wood and clear of machinery. Keep ropes in safe positions, eg away from obstructions, vehicles, equipment and the public.
- Ensure the precautions taken to exclude the public and traffic from the work area are maintained while work is in progress.
- Keep tools and equipment which are not in use away from the immediate work area.
- Control working ropes, but do not wrap a rope around any part of the body to gain extra grip or purchase.
- Continually assess the operation and modify the work plan and risk assessment as necessary. If at any stage you are unsure, stop the work in progress and reassess the operation.
- Where possible share the workload with the climber(s).

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write and explain two techniques of climbing a tree? (4 points)

Note: **Satisfactory rating - 2 points and above** **Unsatisfactory - below 2 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

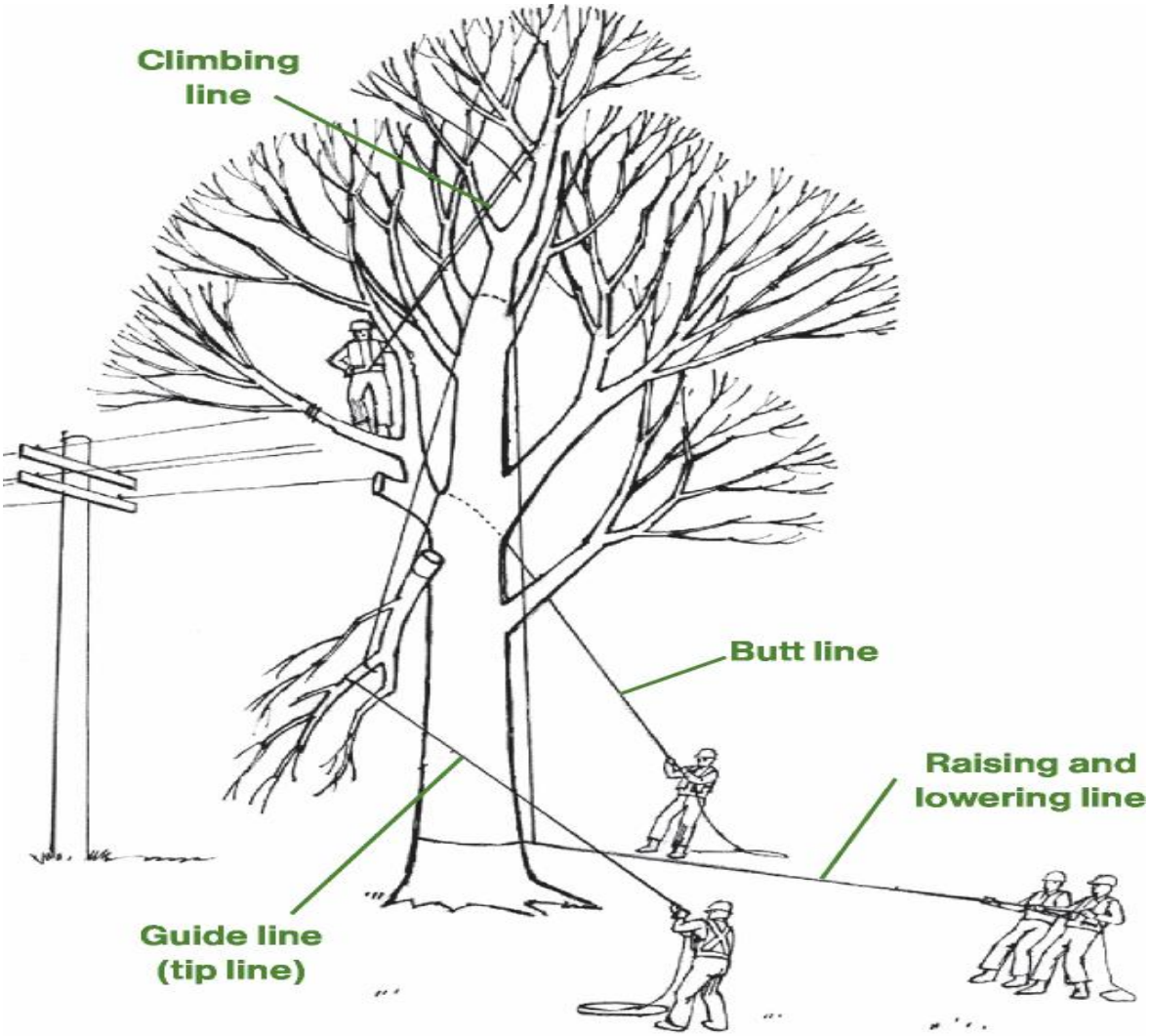
Information Sheet- 4	Performing rope handling techniques

4.1 Rope handling

The working characteristics of a rope depend on the materials used to construct it and the construction method. Not all ropes are suitable for tree climbing work. When selecting rope, consider these points:

1. How will the rope be used—haul line, rappel line, lanyards, or 4-inch tie-in?
2. What rope properties are required for the intended use—static compared with dynamic breaking strength?
3. What type of material is best for the intended use— nylon, Kevlar, manila, polyester, or polyolefin?
4. What type of construction is best for the intended use—laid, kernmantle, or braided?

Because most tree climbing ropes are used for life support, it is critical that you be thoroughly familiar with all aspects of the rope from the time it is purchased until it is retired from service. If you are not personally familiar with the history of the rope you are going to rely on, do not use it. Purchase ropes only from reputable dealers knowledgeable about materials, construction, and breaking strengths. Never purchase used ropes.



If you need to remove a large section of the tree in one piece, use rigging lines to control the fall of the branch.

4.2 Techniques of safe rope handling

Arborists seek adventure in the canopies of trees. Recreational and professional climbers use similar techniques to reach their lofty perch. Each tree climbing technique is designed to ensure a climber's safety. However, experienced climbers use specific techniques for speed and efficiency. In the case of tree removal services, a climber must use a technique that allows him to work with his hands.

4.2.1 Single-Rope Technique

Single-rope technique is used for fast ascents up large trees. The technique is often employed by experienced arborists and rescue crews. In fact, arborists with prior expertise in mountaineering, caving and rock climbing introduced the technique to the tree climbing world. A tool called a crammed ascender attaches to an anchored rope and assists in hoisting the climber's weight up the trunk of the tree. The technique accesses the canopy of a tree, but is not efficient in traversing branches within the canopy.

4.2.2 Double-Rope Technique

The double-rope technique is preferred by beginning climbers and any climber wishing to

move around a tree's canopy. A rope is thrown over a branch. A thin throw rope is attached to the free end of the anchor rope. The two ends of rope attach to a climbing saddle, a padded harness that fits around a climber's hips. The climber uses a knot called Blake's hitch to secure herself to the ropes. The same knot is used in rock climbing and caving, but in these disciplines it is known as a prussic knot. The climber uses this pulling system of ropes to hoist herself up to the tree canopy. When a climber wants to ascend past the branch where the rope is secured, she tosses the throw rope to a higher branch and rescuers the pulley system.

Self-Check- 4	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the types of rope handling techniques. (4 points)

Note: **Satisfactory rating – 2 points and above** **Unsatisfactory - below 2 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Instruction Sheet	Learning Guide # 4

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Using tools and equipments for operation
- Receiving and stacking tree pruning
- Preparing tree pruning for processing
- Undertaking process of tree pruning
- Maintaining surrounding environment from damage

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Use tools and equipments for operation
- Receive and stack tree pruning
- Prepare tree pruning for processing
- Undertake process of tree pruning
- Maintain surrounding environment from damage

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish each “Self-check respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to the next or “Operation Sheet
6. Do the “LAP test”

Information Sheet-1	Using tools and equipments for operation

1.1 Instructions for the usage of tools and equipment

Special characteristics of arboriculture works will force us to select very technical tools and equipments of so much type and they most are industrial products passed through close quality check up and inspection processes.

During accommodation process of tools and equipments by arboriculture enterprise, for each and individual tools and equipments there will be printed free issues of users guide. This users guides are also expresses all about “what it is” and “how to use” instructions.

The above situations give chances arbores and other support workers more to know the instructions about tools and equipment. Therefore this instructions’ should be read thoroughly and understood for each and individual tools and equipments before usage. For instance, as an example:

Handsaws

The free hand should be held clear of the saw and, cuts are to be made way from the body.

Hand saws should have a suitable guard or scabbard complete with some means of attachment to the worker’s belt for working aloft. A tool strop may be used.

Pole pruners

Manual pole pruners, pole saws and other similar tools with poles made of metal or other conductive material shall not be used in line-clearance operations or in other operations where electrical hazards exist. Never stand directly under the limb being pruned.

If raising or lowering pole pruners for tree work aloft, attach the rope to the end of the tool so it is less likely to be caught in branches, the rope must be attached below the cutting jaws and not tied to or run through

Mechanical pruning

Where mechanical pruners are used, the safety specifications as recommended by the manufacturer shall apply.

Self-Check- 1	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write some advantages of knowing instructions for the usage of tools and equipment? (5 points)

Note: **Satisfactory rating - 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Receiving and stacking tree pruning

2.1 Enterprise guidelines for tree pruning

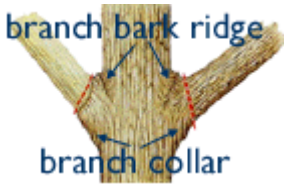
Tree pruning activity enterprise is using different type of tools and equipments like climbing materials which helps in conducting to safe work condition and safe situation to the climber, also different cutting instruments with care and arrangements of drop zone. These all considerations and responsibilities should be enclosed in the guidelines of the enterprise. The enterprises guide line should also give good attention on training and demonstration of any usage of tools and materials to persons participating in operations before engagement.

A tree may need pruning for a variety of reasons:

- *To remove diseased or storm-damaged branches*
- *to thin the crown to permit new growth and better air circulation*
- *to reduce the height of a tree*
- *to remove obstructing lower branches*
- *to shape a tree for design purposes*

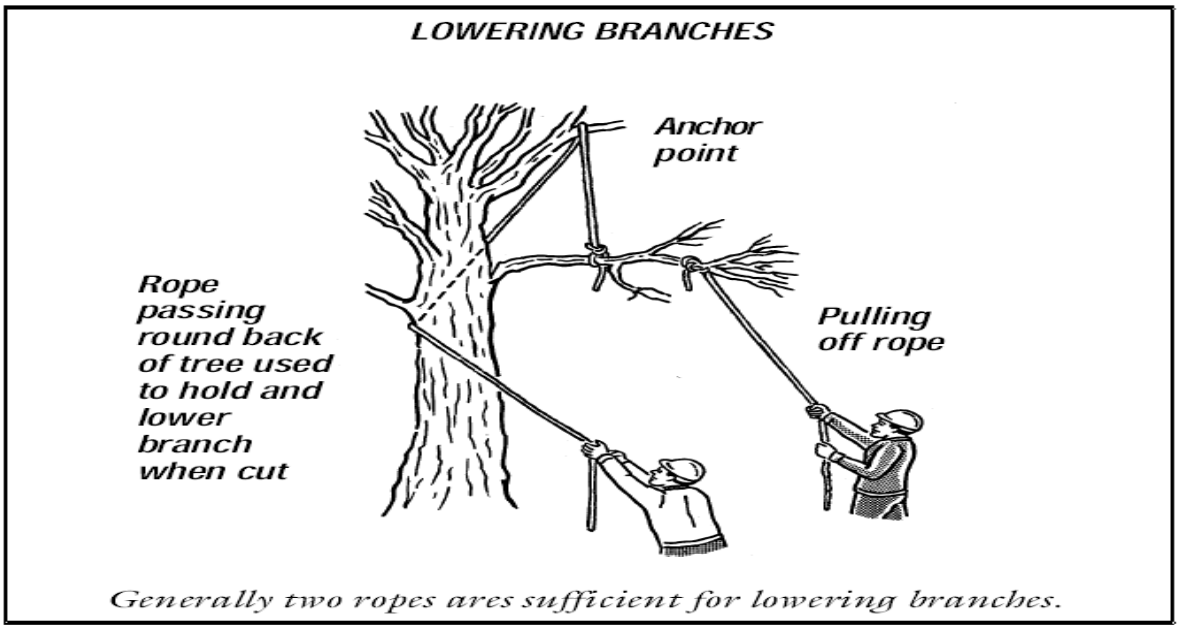
Once the decision has been made to prune, your next decision is whether or not to tackle the job yourself. In the case of a large tree where you want to remove big branches in the upper area of the crown, it may be best to hire experts. Large tree pruning, in particular, can require climbing and heavy saws or even cherry-pickers and chain saws. This is a job that should be left to trained and experienced professionals. Never compromise personal safety in pruning a tree.

2.2 How to Prune?



To prevent tearing of the bark and stem wood, particularly in the case of larger branches, use the following procedure:

1. Make a small wedge shaped cut on the underside of the branch just on the branch side of the stem collar. This will break the bark at that point and prevent a tear from running along the bark and stem tissue.
2. Somewhat farther along the branch, starting at the top of the branch cut all the way through the branch leaving a stub end.
3. Finally, make a third cut parallel to and just on the branch side of the of the stem collar to reduce the length of the stub as much as possible.



Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are the activities that should be done in preparation of tree pruning's for processing?(5 points)

Note: **Satisfactory rating - 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	Preparing tree pruning for processing

3.1 Preparation of tree pruning's for processing

Right after an accomplishment of pruning activity there will be different type of tree valuable products drooped on underneath ground here and there. This products like woody and non woody, leaves, bark shears etc. will contributing to the bad scenario of the landscape and disturb free walking accesses in the site where pruning was conducting.

Considering the above condition, also out puts or products of pruning activity should be collected by type and stored separately for processing and all drop zones must be cleaned.

3.2 Instructions for processing of tree pruning

As indicated above (CO4, LO3) major products of tree pruning products means, branch woody and leaves, bark shears, small cut particles will be collected and separately stored.

Woody parts will be cut and rearranged in the form of wood stock and measured in m3, then will be transported to the market and generate income. But the other thing remnant parts (leaves, bark shears, small cut particles ...) will be raked and collected from drop zone ground for compost production.

- When pole pruning, the operator should wear a safety helmet with a suitable chin strap or combination ear muffs which hold the helmet firmly in position.
- Workers must be at least 1.5 pole lengths apart while working. Never stand directly under limbs being pruned and stand upwind to avoid windblown sawdust.
- If raising or lowering pole pruners for tree work, attach the rope to the end of the tool so it is less likely to be caught in branches.
- When raising or lowering pole pruners with cutting jaws, the rope must be attached below the cutting jaws and not tied to or run through the jaws to eliminate cutting off the rope.
- Always carry pole pruners with the saw or jaws pointing forward and walk at least 1.5 times the pole length away from other workers.

Self-Check- 3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the Instructions for processing of tree pruning(6 points)

Note: **Satisfactory rating - 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-4	Undertaking process of tree pruning

4.1 Tree care

Trees make a major contribution to the quality of the local environment but they also need careful management to avoid problems from nuisance or failure.

Increasing public concerns about environmental and sustainability issues are focusing our attention on the importance of trees in our towns and countryside.
What are my legal rights in relation to nuisance from trees?

Avoiding Negligence All owners of trees have a duty in law, known as a duty of care to take reasonable care to avoid acts or omissions that can be reasonably foreseen to prevent harm. This includes harm to neighbors, visitors or passers by. In relation to trees this means that the householders/ landowner should check their trees for obvious safety problems regularly, and have them professionally inspected from time to time. Any defects required to make the trees safe should be dealt with quickly. In addition, it would be prudent to check trees after severe storms.

4.2 Trees on Boundaries

Common law has established complex rules relating to trees on boundaries:

- A neighbor is entitled to sensitively remove overhanging branches or roots which overhang their boundary providing in doing so this does not damage the trees health or compromise its stability (see note below). We advise that neighbors should discuss their proposal with the tree owner before taking this action
- A neighbor may be entitled to seek damages from the tree owner if a tree is causing immediate damage, such as knocking tiles off the roof
- Where a tree is poisonous the owner must ensure that it does not overhang a boundary where toxic tree parts can be eaten.

Note: Professional arboricultural advice should be sought first - Where trees are protected by a Tree Preservation Order or within a Conservation Area it is necessary to obtain the consent from the Council before pruning.

1.3 Roots

The interaction between tree roots, the soil, buildings and structures is complex. It does not necessarily follow that trees will damage buildings just because of their close proximity.

If you think your property is being damaged by your neighbor's tree/s you should involve your insurer at an early stage.

Do I need permission to prune or fell a tree in my garden?

If the tree is covered by a Tree Preservation Order, you will need permission from the Council before you prune or fell it. If the tree is in a conservation area you will need to notify the Council as this may prevent you from carrying out the work. area. Note: In some circumstances, particularly where an area has been redeveloped, a tree may not be plotted accurately in relation to current boundaries. You should therefore review the information for neighboring plots when seeking to confirm whether a tree is subject to a preservation order. Species descriptions in the schedules can also vary depending on the removal and replanting history of the tree.

Self-Check- 4	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the types of care involved in tree pruning.(5 points)

Note: **Satisfactory rating - 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-5	Maintaining surrounding environment from damage

5.1 Cleaning and the Environment

In this age of environmental concern individuals are outwardly interested in the healthy state of their surroundings. As populations increase and we become more connected with our environment and each other through global communication, commerce and transportation, that interest also increases. Our desire for a clean environment represents a powerful sense of destiny and hope for the future.

We cannot isolate ourselves from the earth's natural processes and our immediate environment—whether it be natural or built. Every element of our existence is derived from our surroundings. Those elements that constitute our physical form and all living and non-living matter have existed since the earth was formed from the sun nearly 4.6 billion years ago. As a result, the environment provides man with nourishment and energy. Energy emitted from the sun travels millions of miles to earth, where it is stored in plants through photosynthesis. Along with other essential elements, matter then is transferred to man through the food chain.

5.2 The Many Benefits of Our Environment

The environment provides many benefits. It heals us and helps us stay healthy. While medicines are derived from the elements of the environment and living organisms, sometimes simply being exposed to sunlight and fresh, clean air makes a difference in how we feel.

Our surroundings educate. Science and technology are the products of observing, studying and using the physical, chemical and biological world around us.

The environment fulfills us when it is used to recreate, apply our sciences and practice our arts. Its natural resources and energy also serve as a unique means of capital, allowing us to run our businesses and the economy. In return, man gives back to the environment all the matter and energy that establishes his existence.

Environmentally Aware

The environmental concern of late has been the extent to which human interaction with natural systems is depleting life-sustaining resources. While valid, this concern is not critical. Indeed, humans are part of the natural world. They possess unique spiritual, social-political and economic needs beyond what nature provides. We must build our own environment to meet those needs. The requirement that environments must support life, good health and human productivity warrants closer examination of how the environment we build and inhabit is organized and managed.

A new environment and economic theory is emerging that recognizes four factors.

The environment is not fully elastic. Past theories surmised that the natural system's supplying potential was infinite.[1] The economic system was free to extract as much as possible from the natural system, which was perceived as vast with unbounded abilities to assimilate diseconomies. Man did not need to clean. Instead, dilution sufficed until it was feasible to relocate to a clean environment. When the consumer population was smaller, relative to size and the carrying capacity of the natural environmental system, this supposition was reasonable. As populations grew, the earth's limitations were more apparent and a non-traditional economic view of the natural system surfaced.[2] The natural system is since perceived as a unique form of economic capital that must be kept clean if we are to sustain a suitable quality of life.[3]

The environment is not an issue, it is a "value." Industrialized societies often perceived the environment as a free good—an expendable, renewable resource. The worst offenders considered the environment a resource with no value in itself. Instead, it was valued as a dumping ground or limitless sink for the diseconomies or wastes of living and industrial operations. This "dumping ground" mentality has been replaced by "green and clean."[4]

The environment—whether natural or built—is a unique form of capital.[5] Capital that produces income and wealth takes on four forms:[6] financial, human, technological and environmental. Each of these is essential to business and human existence. All goods, services and human health conditions connect with the environment and its quality. Wealth is not readily created in clean space, especially in today's age of high-tech information.

The perception of sustainable development has changed. Previously, sustainable development was narrowly defined as improving the quality of life while living within the carrying capacity of supporting ecosystems. The emerging concept of "sustainability" is, however, rapidly expanding to include environmental, economic and social equity. To this end, there is a growing recognition that these factors be considered simultaneously.[7] The connection between each element increasingly forces changes to the traditional way consumers and businesses operate and relate to each other; how new technologies and products are developed, sold and used; how markets are structured; and how communities develop and grow.

5.3 Solving the Environmental Problems

Responsible consumption and conservation are ways to solve environmental problems. It is important to recognize, however, that creating wealth and protecting the environment coexist. The environment cannot be protected by conservation alone. Wealth and surplus must provide the resources—mainly energy—to maintain order and keep objects and places clean. Maintaining the diseconomies that supply and demand causes keeps the biosphere alive and the built environment functioning. Sustaining a healthy economy also is critical to controlling pollution and maintaining a clean and healthy environment. Without wealth there are no resources to manage and control pollutants, especially through cleaning. Additionally, the world's natural resources must be used efficiently and the environments that create wealth must be kept clean.

Before the market demand for effective cleaning services can be understood we must comprehend the utility of cleaning. Supply and demand, not utility directly, determine cleaning's financial value. As consumers recognize that value, the demand for effective cleaning increases. The cost for that cleaning depends on the availability of capable firms to

deliver high performance and effective cleaning services. For cleaning to be valued—particularly in a business and economic sense—individuals must be knowledgeable and educated about its usefulness and benefits.

5.4 Why Clean?

Clean is a condition of the environment that is free of unwanted matter. Cleaning is the process used to achieve the clean condition. Best viewed as a fundamental environmental management process, cleaning is a systematic, science-based process that puts unwanted matter in its proper place or where it does not cause harm or adverse effects. Understanding the importance and effectiveness of cleaning allows us to fully appreciate its usefulness and the contributions it makes to the quality of life.[8]

Man cannot live and survive amidst waste. A clean environment that includes clean air, water, land and energy, is essential for human existence, conducting business and creating wealth. These components must be sustained through conservation and proper management. Additionally, by-products of human activity should be separated from man at the sanitary level the cleaning process provides.

From the start of civilization, man has been the only species that cleans its environment, albeit for the sake of survival. Other animal life “foul the nest,” move out and allow the cycles of nature to produce the waste. As long as man has lived in human settlements, he has been forced to keep his environment in order or clean.[9]

As a result of biological necessity, humans manage their lives by managing their environment. The basic objective of the human settlement/built environment is to define a living space to defend man from his surroundings. In settlements, natural elements, such as rain, snow and dirt, remain outside at a distance. Other living creatures—particularly humans and animals—are kept at bay.

Once human settlements emerged, environmental management systems became necessary for separating inhabitants from their own waste products. Man no longer could strike his tent and move on. Wastes grew and needed to be placed out of the way. Well-designed wells and garbage pits were found at the archeological sites of isolated dwellings and villages. Ancient settlements that survived and evolved into modern built environments sustained life because of the evolving process of environmental management, the center of which is the sanitation revolution and cleaning.[10]

Usually, the cause of adverse environmental effects can be explained or managed. We have better direct control and influence over environments that are closest to us, such as the built environment in which we live and work. These environments can be managed and kept orderly and functional primarily through cleaning.

5.5 Cleaning Reduces Environmental Risks, Enables Sanitation

Sanitary conditions are where the risk of adverse health effects is low or acceptable.[11] Effective cleaning reduces exposures to hazardous matter, thereby reducing risks while contributing to a sanitary state.

Indoor environments are readily manageable, unlike ambient environments where the causes of pollution and its control are complex. Built environments can be designed, operated and maintained to suit their inhabitants’ needs.

We need to better understand the influence natural and manmade environments have on our health. Once we do, it becomes apparent that effective management, especially in the form of cleaning, is the key to removing unwanted by-products and reducing serious health risks.

Adverse effects, while harder to define, usually are described as conditions we will pay to control or correct, such as health, comfort and property values. On a micro-scale, environmental change is part of natural evolution. Adverse macro-change in built environments due to human activity, however, is preventable through effective management, mainly cleaning.

Five basic methods can be employed to limit pollution to a desirable and safe level: source management, which includes source removal or modification; activity management; design intervention; dilution; and cleaning that includes housekeeping, maintenance and restoration. Cleaning reduces adverse exposure levels and risks by removing problem substances from the environment, thereby reducing or eliminating exposure and effect. Effective cleaning often is the most cost efficient means of managing risk in a built environment.[12]

5.6 Clean and Green

Today's talk is all about "green;" that universal symbol of value, respect and concern for the life-sustaining processes and cycles of the natural environment system, of which we all are a part. Those same processes determine our health and quality of life that we, as humans, can adversely affect and alter by our activities if wastes are not managed properly.

Traditionally, the concept of "green" has centered on preventing pollution, minimizing waste and recycling, all to prevent unwanted matter from harming the natural environment. The concepts of clean and "green" are complimentary. Clean is a condition free of unwanted matter, with matter being any substance that has mass and is influenced by gravity. Substances are solids, liquids and gases and can be living or non-living. Matter can be measured and described quantitatively. Conversely, unwanted matter is any substance that obstructs human endeavors, poses a risk or causes an undesirable or adverse effect. Often this type of matter is referred to as pollution, although it goes by other names, such as wastes, soils, dirt, dust, trash and pathogenic microorganisms.

Cleaning is the method used to achieve a clean environment. It can best be viewed as a fundamental environmental management process of putting unwanted matter in its proper place. This ensures an environment that is sustainable and functioning.

Cleaning also is a systematic, science-based process. When applied to environments and environmental sub-compartments, that process is comprised of specifying and understanding the nature and characteristics of what is to be made free of unwanted matter, such as pollution or soils. It also locates, identifies and understands the physical, chemical or biological characteristics of the unwanted matter to be removed; separates and contains the matter prior to removal; transports and removes the unwanted substance from the environment or the object to be cleaned; and properly disposes or repositions the matter so as not to degrade or harm other environments or the natural environmental system.

The question then becomes how clean is clean?

In the tradition of environmental health clean is perceived on three levels: sterilization, disinfection and sanitation. For an environment to be considered sterile it must be 100

percent contamination-free. Sterilization can be achieved, although it is extremely difficult since in routine cleaning items and places—as a rule—are not sterilized.

An environment is considered disinfected if the vast majority (99 percent) of its harmful substances are removed or made safe. The pathogens most threatening to humans also must be eliminated. A disinfected condition only can be achieved with considerable work and energy.

Sanitary environments are cleaned to the extent that general health is protected. Some contamination, however, is present and an acceptable risk level for disease exists. At a minimum, cleaning always must attain a state of "sanitation," since unsanitary conditions pose a likely health risk. Cleaning is designed to rectify any risky conditions. Environments must be cleaned regularly to keep them sanitary. If the health risk has not improved to a sanitary level, cleaning has not been accomplished.

Effective cleaning removes unwanted matter to the greatest or optimum extent possible. Doing so ensures acceptable risk—the reduced probability of an adverse effect for humans, their valuables and the natural environment—from exposure to such matter. By virtue of this definition and its thoughtful design, effective cleaning fully protects the environment.

Self-Check- 5	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the benefits of our environment.(5 points)
2. Why we clean our environment ?(5 points)

Note: **Satisfactory rating – 5 points and above** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Instruction Sheet	Learning Guide # 30

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Checking Tools, equipment and machinery
- Preparing for transportation and storage
- Collecting and disposing/recycling waste materials

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Check Tools, equipment and machinery
- Prepare for transportation and storage
- Collect and dispose/recycle waste materials

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish each “Self-check respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to the next or “Operation Sheet
6. Do the “LAP test”

Information Sheet-1	Checking Tools, equipment and machinery

1.1 Condition of Tools, equipment and machinery

Continue to check the condition of your equipment frequently during the climbing assignment. After the job, inspect the equipment and refurbish as needed so it is ready for the next assignment or for emergency use. Restrict equipment access to certified climbers and use the equipment exclusively for tree climbing work. A locked storage area is advisable. Storage areas should be secure from rodents and chemicals—a must for rope, webbing, and harnesses. Clearly mark or tag all defective equipment to prevent further use and repair or take it out of service. Certified climbers should be responsible for all of their own climbing equipment. Keep manufacturers' equipment specifications and care recommendations on file for ready access.

Equipment, especially ropes, webbing, and loops, should never be walked on or driven over. This kind of abuse causes damage in ways that are not always apparent and could cause failures.

Climbing equipment, especially life-safety ropes, must not be left in a tree for an extended period. The equipment needs to be closely inspected before each use, and it cannot be if it is left in the tree. Tree sap, insects, animals, abrasion, sunlight, and rain affect climbing equipment, and equipment cannot be monitored or controlled when it is left in the tree. If a tree will be climbed more than once, a utility cord can be left in a position that allows climbing ropes to be easily put in place for future climbs.

When life-safety equipment shows significant wear, it should be taken out of service. Significant wear could be a frayed leg loop on a harness or a small crack in a gaff. Do not use any safety equipment that was involved in a significant fall. Harnesses, ropes, and any slings or webbing that helped arrest a fall can receive damage that is undetectable during inspection. The climbing components might fail the next time they are used.

Do not paint metal equipment. Paint can hide defects that can cause failure.

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What feature of tools, equipment and machinery are checked? (3 point)
2. What is the purpose of checking tools, equipment and machineries? (3 point)

Note: **Satisfactory rating – 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Collecting and disposing/recycling waste materials

2.1 What will be collected?

Household branches and pruning that are:

- up to 150mm (six inches) in diameter
- no longer than 1.5 meters (five feet) in length
- Up to one cubic meter in volume egg. no more than a single trailer load
- neatly bundled and securely tied with string or twine, or placed in containers that can be emptied and left on the kern

Note: due to Occupational Health and Safety regulations, individual bundles or containers must not exceed 15kg in weight.

What will be collected

- untied branches or pruning's
- bags of any kind
- hard rubbish or household waste
- noxious weeds like ivy, prickly pears, box thorns and blackberries

Note: any unacceptable items placed out for collection will be left behind

2.2 Items that can be placed out for collection:

- Household appliances and furniture
- Dismantled wardrobes
- General unwanted household items in boxes
- Timber not exceeding one meter in length
- Chinaware and window glass (wrapped in cardboard or thicker paper, clearly marked 'glass')
- All waste metal including tin, scrap iron and lawnmowers
- Car parts not exceeding 1.5 meters in length and 15 kg in weight
- All white goods including fridges and washing machines (for safety requirements fridge doors **must**be removed)

Items that cannot be placed out for collection:

- Hazardous waste
- Rubble

- Chemicals
- Tires
- Branches and pruning's
- Asbestos
- Paint/tins containing wet paint
- Items longer than 1.5 meters
- Loads exceeding two cubic meters
- Items heavier than 15 kg
- Liquid waste
- Recyclables e.g. bottles, paper
- Materials from renovations, building sites and/or fencing

2.3 Storage of petrol and other flammable liquids

.Petrol and other flammable liquids shall be conveyed, stored and packed in containers Containers shall:

(a) Be made of metal or other approved materials;

(b) Be of such construction that the contents cannot escape in either liquid or vapor form;

(c) If made of plastic, be approved and be marked with the LAB approval number for use in Transportation of fuel by foot).

. No flammable liquid shall be carried or store in the same compartment of a gang bus or other vehicle which is being used or which is used for transporting personnel. When it is necessary to carry flammable liquids in vehicles, the container or containers shall be secured in a properly constructed and vented compartment separate from that used to carry passengers. Such a compartment shall be accessible only from the exterior and be vented to the exterior.

. Flammable liquids shall not be transported in containers mounted to or protruding over the front or rear bumpers of any vehicle.

2.4 Sustainable gardens

Gardening is a way for us to create a beautiful environment, provide habitat for our native animals and give us the satisfaction of growing our own fruit and vegetables. Gardening sustainably encourages us to minimize our water, fertilizer and pesticide needs, and maximize the habitat value of our garden so keep your environment and working place.

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is the purpose of collecting and disposing of, or recycling waste? (5points)

Note: **Satisfactory rating – 3 points and above** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Instruction Sheet	Learning Guide # 32

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Recording and documenting information
- Maintaining and reporting records of ground support operations
- Communicating work completion and hazard information

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Record and document information
- Maintain and report records of ground support operations
- Communicate work completion and hazard information

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish each “Self-check respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to the next or “Operation Sheet
6. Do the “LAP test”

Information Sheet-1	Recording and documenting information

1.1 Recording information

Every organization and business has a particular method for storing information /documenting /. It is important that all who need to access that information are familiar with the location and the filing systems used. Records might be stored in the following places:

- filing cabinets
- computer files and databases
- folders on shelves, in drawers or under counters
- pin boards and white boards

Information stored in filing cabinets is usually organized alphabetically or under different topic headings. Basic computer skills are required to access computer records. Help should be sought if a particular piece of information cannot be found. All records should be filed correctly and returned to the appropriate location after use.

Many workplaces also store information which is confidential. Anyone with access to these records should only use them when necessary and only allow distribution of the information to relevant personnel or authorities.

Documentation includes mandatory documented procedures as required by the standard and other documents such as specifications, records, etc. the important issue is that your people have the information they need to do their job. Some common terms used are:

- Work practices
- Operating practices, operating instructions or operating procedures
- Specifications and
- Drawings

Documentation should indicate, who does what, where, when, why, and how. It should not be a wish list of what you would like to happen in your business, but should clearly and accurately reflect what really happens. For example, it is not necessary to have a formal document on how to open a door- simply putting “push” or “pull” on the door suffices.

You have to decide how much detail is needed. This will depend largely on the method used, the skills needed, the training undertaken and the extent of supervision required. Excessive detail does not necessarily give you more control of the activity and should be avoided. Training can reduce the need for detailed documentation, provided that everybody has the information they need to do their job correctly.

Existing documentation might be adequate, and may then be simply referenced in the quality manual.

Remember documentation may be in any reproducible form and can vary enormously ranging from separate formal documents, to technical notes incorporated into a drawing to instruction manual equipment.

They could also be in pictorial or video form. Graphic formats or a video or simple set of pictures can be particularly useful since visual aids can often convey the information more accurately than a lengthy detailed description.

1.2 Documentation requirements and Value of documentation

The quality management system documentation shall include

a) Documented statements of a quality policy and quality objectives

b) A quality manual

c) Documented procedures required by international standard

d) Documents needed by the organization to ensure the effective planning, operation and control of its processes

e) Records required by international standards

1.3 Types of document

The following types of document are used in quality management system

a) Documents that provide consistent information, both internally and externally, about the organization's quality management system: such documents are referred to as **quality manuals**;

b) Documents that describe how the quality management system is applied to a specific product, project or contract; such documents are referred to as **quality plans**;

c) Documents stating requirements; such documents are referred to as **specifications;**

d) Documents stating recommendations or suggestion; such documents are referred to as **guidelines;**

e) Documents that provide information about how to perform activities and processes consistently; such documents can include **documented procedures**, **work instructions** and **drawing;**

f) Documents that provide objective evidence of activities performed or results achieved; such documents are referred to as **records;**

Each organization determines the existent of documentation required and the media to be used. This depends on factors such as the type and size of the organization, the complexity and interaction of processes, the complexity of products, customer requirements, the applicable regulatory requirements, the demonstrated ability of personnel, and the extent to which it is necessary to demonstrate fulfillment of quality management system requirements.

Self-Check- 1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Define the term documentation(5 points)
2. List out the documentation requirements. (5 points)
3. What are the major record place for storing data/information/?(5 points)

Note: **Satisfactory rating – 8 points and above** **Unsatisfactory - below 8 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Maintaining and reporting records of ground support operations

2.1 Identification and management of risks

Employers should establish and maintain procedures to identify systematically the risks to safety and health which may affect, or arise from, forestry activities.

The identification should include hazards and risks actually and potentially leading to occupational accidents and diseases, incidents and emergency situations.

For each task and activity a risk evaluation should be carried out. Any risks should be identified and recorded.

Procedures should be maintained to evaluate risks and effects from identified hazards against screening criteria, taking account of the frequency with which they occur and the likely severity of consequences for safety and health.

Based on the results of risk evaluation, enterprises should define objectives for the reduction of such risks to as low a level as possible, and devise and implement corresponding preventive measures. These should include the routine application of site inspection and planning as well as of the principles of work organization

Managers, supervisors and workers should, as appropriate, be involved in the identification of risks and of their effects on safety, health or the working environment.

2.2 Communication and information

Employers should provide adequate information to workers about all identified risks to safety and health in their respective work activity

Contractors should be sufficiently informed about the safety objectives and safety standards applying to the forest worksites in the area where they are contracted.

Information should be given to workers and contractors in a language that they understand. Special measures may be required when there are people working in an enterprise who speak different languages.

In order to ensure the full integration of safety and health concerns into forestry operations, general codes of forestry practices or operations manuals should incorporate safety and health regulations and advice alongside provisions pertaining to quality, productivity, environmental and other aspects.

For easy reference, concise and illustrated leaflets or cards to be used on site should be prepared for each major function or operation. These should incorporate safety and health measures into general work instructions and specifications.

2.3 Documentation

All relevant information concerning safety and health should be maintained and periodically updated in the enterprise's database and should be readily available for the information of workers or their representatives, contractors, inspectors, workers' compensation bodies and any other parties concerned. This may include relevant accident costs.

Documentation should include:

(a) Safety and health policies and strategic objectives;

(b) Safety and health measures and strategies;

(c) The tasks and responsibilities of management, supervisors, workers and contractors;

(d) The findings of risk evaluation and risk management, including a list of all hazardous substances used in the workplace;

(e) Records on occupational accidents, occupational diseases and dangerous occurrences which have been reported or notified.

2.4 Safety requirements for tools, machines and hazardous chemicals

Because of the wide variety of tools, machines, hazardous chemicals and work methods used in forestry, this code cannot give a detailed description of safety requirements for all the tools, machines and hazardous chemicals available. Coverage cannot be exhaustive, either in terms of the selection of tools, machines and hazardous chemicals, or in the level of detail provided; but general principles will be described.

2.4.1General requirements

All tools, machines and hazardous chemicals used in forestry should:

(a) Comply with safety and health requirements as prescribed in international or national standards and recommendations, wherever these are available;

(b) Be used only for work for which they have been designed or developed, unless a proposed additional use has been assessed by a competent person who has concluded that such use is safe;

(c) Be used or operated only by workers who have been assessed as competent and/or hold appropriate skill certificates.

Tools, machines and equipment should be of good design and construction, taking into account health, safety and ergonomic principles, and they should be maintained in good working order.

Appropriate checklists which are based on a complete assessment of all relevant criteria should be used when selecting a machine. This helps to create a healthy and productive working environment and ensure that the machine is suitable for its intended purpose.

Employers, manufacturers or agents should provide comprehensive and clear instructions and information on all aspects of operator/user maintenance and the safe use of tools, equipment and hazardous chemicals. These should include any requirements for personal protective equipment as well as the need for training.

Facilities for repair and maintenance of tools and equipment should be provided, preferably close to shelters or housing facilities. Mobile shelter wagons with separate maintenance compartments for minor repair and maintenance work on chain-saws and hand tools are recommended.

In camps, provision should be made for workshop facilities with a good selection of appropriate maintenance tools, to allow maintenance and repair work to be carried out under safe conditions, without exposure to inclement weather conditions.

Hand tools

Hand tools for cutting and splitting should be manufactured from good quality steel which maintains its cutting edge and effectiveness with the minimum amount of maintenance.

The head of a tool for cutting and splitting should be fixed securely onto the handle with an effective device, for example a wedge, rivet or bolt.

Handles should provide a secure grip and should be made of good quality wood or other materials suitable for this purpose.

The specification of tools, such as size, length of handles and weight, should be appropriate to cater for the needs of the work and the physical attributes of the user.

When not in use, sharp-edged tools should be sheathed with an appropriate device.

2.5 When is an Arborist Report Required?

The arborist report requirements in the heritage and significant tree removal ordinances are basically identical. “An Arborist's report is required for significant or heritage trees proposed for removal on the basis of poor health, potential hazard, or when a significant or heritage tree(s) is proposed to remain, but new development would encroach within the dripline of the tree(s)”. When a significant or heritage tree(s) is proposed to remain on a project site, but new development would encroach within the dripline of the tree(s), there is a requirement for an arborist report to document the affected trees and the necessary protection measures. When tree removal or trimming permits are appealed to the Planning Commission or are part of development proposals being reviewed by the Planning Commission, the Commission has broad discretion to require additional information to guide its decision making. More

extensive arborist reports may be required to address specific questions that arise during Planning Commission review. County Ordinance Section 12,020.4. Existing Tree Plan Application Requirements, added by Resolution No. 04763 on October 18th 2016, requires an arborist report as part of existing tree plans, which must be submitted when applying for a planning or building permit. An arborist report is required if trees outside of the proposed structure's footprint will be affected, as detailed in Appendix 1. The County currently does not specify in its ordinances what kind of report the applicant is required to provide, and the content requirements are broad and somewhat imprecise, and could be more expansive and detailed, including requiring differing levels of information in different circumstances.

2.6 What Contents Are Required in an Arborist Report?

The application requirements for tree removal permits include, in part that "General health of tree to be trimmed, cut down or removed, as documented by a licensed arborist... The arborist report shall assess the condition and health of the tree proposed for removal, the actions that could be taken to avoid removal, and the recommended course of action. The submitted arborist report shall be subject to the review of an independent arborist, who shall provide a recommendation to the Community Development Director and other decision making bodies on whether to deny or conditionally approve the application." The tree plan must accurately show the location of tree trunks and canopy, structural footprints and proposed utilities, and must be prepared by a licensed surveyor or a registered civil engineer.

The letter format report will satisfy the County's needs for cases that involve a property owner applying for the removal of one to three trees. The information required in a significant tree removal permit application could be used as a baseline for what is required in a letter format arborist report:

- The diameter and height of the tree.
- The type of trees (e.g., coniferous, evergreen hardwood and deciduous hardwood).
- A map or accurate sketch of location and trees proposed to be cut (show other significant trees, shrubs, buildings or proposed buildings within 25 feet of any trees proposed to be cut including any off the parcel; photographs may be used to show the area).
- Method for marking the tree proposed to be trimmed, cut down, removed or destroyed.
- Description of method to be used in removing or trimming the tree.
- Description of tree planting or replacement program, including detailed plans for anIrrigation program, if required.
- Reasons for proposing removal or trimming of the tree.
- Street address where tree is located.
- General health of tree to be trimmed cut down or removed, as documented by a• licensed tree surgeon or arborist.

This basic information, along with conclusion and recommendations sections, is already included in most letter reports. The County asks for this information in the tree removal permit application, but does not specify what the accompanying arborist report must contain. There are many different tools used by arborists to accomplish their task of

determining external and internal conditions of a given tree. The tools and methods used depend on the specific goal of the permit applicant and the level of assessment agreed upon with the arborist. A limited visual assessment typically won't involve any tools. Basic assessment might be conducted with sounding and probing techniques (McLean, 2014). Sounding is usually performed with a rubber or nylon mallet, and involves striking a part of the tree and recognizing the different sounds made by solid and hollow wood. Probing is done by inserting a measuring stick into cavities in the tree to assess the extent of internal decay. In the advanced assessment, battery-powered drills or increment borers can be used to inspect internal conditions in the tree (McLean, 2014). These tools allow for the arborist to pull out and inspect wood shavings or tubular wood cores, noting changes in color or density. The more expensive tools are gaining popularity in the industry, because they provide for more accurate assessments of internal conditions. The resistance-recording drill can be used to locate internal decay. "A small drill bit is used to drill into wood at a constant speed. The relative resistance encountered during drilling is plotted or recorded digitally"

Self-Check- 2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the things to be included in documentation (5points)
2. When is an arborist report required? (5points)
3. What contents are required in an arborist report? (5points)

Note: **Satisfactory rating – 8 points and above** **Unsatisfactory - below 8 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	Communicating work completion and hazard information

3.1 Identifying Hazardous Chemicals in the Workplace

The standard requires a list of hazardous chemicals in the workplace as part of the written hazard communication program. The list will eventually serve as an inventory of everything for which you must maintain an MSDS. At this point, however, preparing the list will help you complete the rest of the program since it will give you some idea of the scope of the program required for compliance in your facility.

The best way to prepare a comprehensive list is to survey the workplace. Purchasing records also may help, and certainly employers should establish procedures to ensure that in the future purchasing procedures result in MSDSs being received before using a material in the workplace.

The broadest possible perspective should be taken when doing the survey. Sometimes people think of "chemicals" as being only liquids in containers. The HCS covers chemicals in all physical forms -- liquids, solids, gases, vapors, fumes, and mists -- whether they are "contained" or not. The hazardous nature of the chemical and the potential for exposure are the factors that determine whether a chemical is covered. If it's not hazardous, it's not covered. If there is no potential for exposure, (e.g., the chemical is inextricably bound and cannot be released), the rule does not cover the chemical.

Look around. Identify the chemicals in containers, including pipes, but also think about chemicals generated in the work operations. For example, welding fumes, dusts, and exhaust fumes are all sources of chemical exposures. Read labels provided by the suppliers on hazard information. Make a list of all chemicals in the workplace that are potentially hazardous. For your own information and planning, you also may want to note on the list the location(s) of the products within the workplace, and an indication of the hazards as found on the label. This will help you as you prepare the rest of your program.

Paragraph (b), scope and application, includes exemptions for various chemicals or workplace situations. After compiling the complete list of chemicals, you should review paragraph (b) to determine if any of the items can be eliminated from the list because they are exempted materials. For example, food, drugs, and cosmetics brought into the workplace for employee consumption are exempt; rubbing alcohol in the first aid kit would not be covered.

Once you have compiled as complete a list as possible of the potentially hazardous chemicals in the workplace, the next step is to determine if you have received material safety data sheets for all of them. Check your files against the inventory you have just compiled. If any are missing, contact your supplier and request one. It is a good idea to document these requests, either by copy of a letter or a note regarding telephone conversations. If you have

MSDSs for chemicals that are not on your list, figure out why. Maybe you don't use the chemical anymore. Or maybe you missed it in your survey. Some suppliers do provide MSDSs for products that are not hazardous. These do not have to be maintained by you. If you have questions regarding the hazard status of a chemical, contact the manufacturer, distributor, or importer.

You should not allow employees to use any chemicals for which you have not received an MSDS. The MSDS provides information you need to ensure you have implemented proper protective measures for exposure.

3.2 Preparing and Implementing a Hazard Communication Program

The HCS requires all workplaces where employees are exposed to hazardous chemicals to have a written plan that describes how that facility will implement the standard. Preparation of the plan is not just a paper exercise -- all of the elements must be implemented in the workplace to comply with the rule. See paragraph (e) of the standard for the specific requirements regarding written hazard communication programs. The only work operations that do not have to comply with the written plan requirements are laboratories and work operations where employees only handle chemicals in sealed containers. See paragraph (b), scope and application, for the specific requirements for these two types of workplaces.

The plan does not have to be lengthy or complicated. It is intended to be a blueprint for implementing your program -- an assurance that all aspects of the requirements have been addressed.

Many trade associations and other professional groups have provided sample programs and other assistance materials to affect employers. These have been very helpful to many employers since they tend to be tailored to the particular industry involved. You may wish to investigate whether your industry trade groups have developed such materials.

Although such general guidance may be helpful, you must remember that the written program has to reflect what you are doing in your workplace. Therefore, if you use a generic program, you must adapt it to address the facility it covers.

For example, the written plan must list the chemicals present at the site and indicate where written materials will be made available to employees. It also may indicate who is responsible for the various aspects of the program in your facility.

If OSHA inspects your workplace for compliance with the HCS, the OSHA compliance officer will ask to see your written plan at the outset of the inspection. In general, the following items will be considered in evaluating your program.

The written program must describe how the requirements for labels and other forms of warning, materials safety data sheets, and employee information and training, are going to

be met in your facility. The following discussion provides the type of information compliance officers will be looking for to decide whether you have properly addressed these elements of the hazard communication program.

Self-Check- 3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Why we Identify hazardous chemicals in the workplace? (5 points)

2 How we can prepare and implement a hazard communication program? (5 points)

Note: **Satisfactory rating – 5 points and above** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

List of Reference Materials

1. http://tpu.bluemountains.net/unit-display.php?recordID=16707&s=RTF03
2. http://www.cleshar.co.uk/disciplines/facilities-support-services/case-studies/vegetation-control-and-arboricultural-management.html