Vehicle Servicing and Repairing Level II

Learning Guide-#38

Unit of Competence: - Carry out Wheel Alignment

Module Title: - Carrying out Wheel Alignment

LG Code: EIS VSR2 M010 LO1-LG-38

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LO4: Clean-up work area and maintain equipment

Instruction Sheet	Clean-up work area and maintain equipment

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

- ✓ Collect and store reuse material.
- ✓ Remove waste and scrap.
- ✓ Clean and inspect equipment and work area.
- ✓ Identify, tag and isolate faulty equipment.
- ✓ Complete operator maintenance.
- ✓ Maintain tools and equipment.

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 –**

- ➢ Material that can be reused is collected and stored.
- ➢ Waste and scrap are removed following workplace procedures.
- ➢ Equipment and work area are cleaned and inspected for serviceable condition according to workplace procedures.
- ➢ Faulty equipment are identified, tagged and isolated according to workplace procedures.
- ➢ Operator maintenance is completed according to manufacturer and component supplier specifications and site procedures.

Tools and equipment are maintained according to workplace procedures.**Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 20.
3. Read the information written in the “Information Sheets 1”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-check 1” **in page -.**
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check 1).

6. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #1.
7. Submit your accomplished Self-check. This will form part of your training portfolio.

Information Sheet-1	**Collect and store reuse material.**

Collect and store materials Identify work areas to be cleaned and maintained

/Introduction Introduction to trainee manual To the Trainee
Congratulations on joining this course. This Trainee Manual is one part of a „toolbox“ which is a resource provided to trainees, trainers and assessors to help you become competent in various areas of your work.
The „toolbox“ consists of three elements:
A Trainee Manual for you to read and study at home or in class

A Trainer Guide with Power Point slides to help your Trainer explain the content of the training material and provide class activities to help with practice

An Assessment Manual which provides your Assessor with oral and written questions and other assessment tasks to establish whether or not you have achieved competency.

The first thing you may notice is that this training program and the information you find in the Trainee Manual seems different to the textbooks you have used previously. The method used is called Competency based training (CBT) and Competency based assessment (CBA).
The aim is of the training is to enable trainees to perform tasks and duties at a standard expected by employers.
.
As a cleaner it is your job to make sure that all areas are cleaned to a high standard and report any faults with fixtures and fittings. You can do this by learning all aspects of your job. Most people who stay in hotels choose to do so the first time because of location or price.

Cleaning is the removal of all visible soil in an approved way with the use of mechanical and chemical action or both, so that all areas are cleaned and sanitized to a high standard. Cleaning is an investment in the assets of a building Maintenance is the upkeep of all furniture, fittings and equipment to an exacting standard within the property so that all areas look consistently new and pristine.

If your local government authority has health regulations regarding cleaning and sanitizing, then you must know these and follow their recommendations at all times. It is important when you are cleaning that you clean to a high standard that has been set for you by your supervisor or manager Element 1: Identify cleaning and maintenance requirements Trainee Manual Clean and maintain industrial work area and equipment

If there is peeling paint, stains on chairs, torn curtains or dead plants, your guest may feel that the property is neglected and will feel insecure.

To Maintain a Safe and Clean Environment If the property is clean and well-maintained it is more likely to be safe. If spills are not cleaned promptly people can slip and be hurt. If carpets have holes or chairs are broken this can lead to injuries and possible financial compensation claims against the hotel.

To Improve Staff Morale All staffs who serve the general public must feel positive about their work environment if they are to give good service. There should not be different cleaning and maintenance standards between front and back of house areas. All staff needs to feel they work in a safe and clean place.

There are five methods of storing vegetables and fruit: drying, canning, curing and salting, freezing and common storage. Which method is chosen depends upon the type of produce, the quality desired and the facilities available for storage.

Paper-based preservation techniques include preservation photocopying, preservation microfilming, and preservation transfer microfilming.

. Digital preservation techniques include conversion, migration, and emulation. difference between preservation and conservation, Both terms involve a degree of protection, but how that protection is carried out is the key difference. Conservation is generally associated with the protection of natural resources, while preservation is associated with the protection of buildings, objects, and landscapes Material that can be reused is collected and stored

By cleaning glass jars and small pots, you can use them as small containers to store odds and ends. Newspaper, cardboard and bubble wrap Make useful packing material when moving house or to store items. Old clothes – can be made into other textile items such as cushion covers or teapot copies. 8.3 Waste reuse

Different types of solid wastes can be reused, such as bottles, old clothes, books and anything else that is used again for a similar purpose to that originally intended. Reuse means that less solid waste is

produced.

Use reusable bags when shopping.

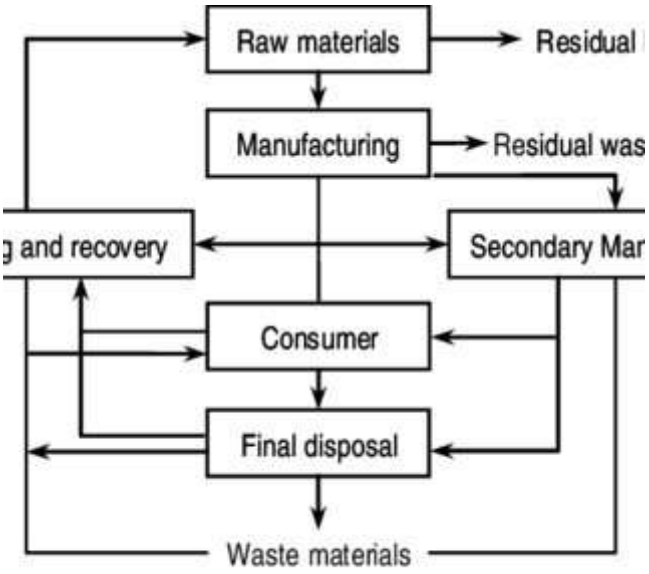
1. Use gray water. ...
2. At the town level, purified sewage water can be used for fountains, watering public parks or golf courses, fire fighting, and irrigating crops.
   Rain can be caught in rain barrels and used to water your garden.

Harmful Effects of Wastes

i. Solid wastes materials

The following are the harmful effects of the solid waste materials if disposed improperly in the environment

1. Clogging of public sewerage system which eventually causes flooding
2. Breeding grounds for flies, mosquitoes and other disease-carrying insects
3. Pollution of land, water and air
4. Poor health or even death of human beings, animals and other living things
5. Negative impression to our country.
6. Negative impact to our tourism industry.
7. Poor economy



Raw material product and recovered materials

ii. Used oil

It contains hydrocarbons, carbon monoxide, sludge and other toxic materials that pose health hazards to human beings and other living things. When inhaled, or taken internally. Used oil when disposed in the public sewerage system find its way to the river and the seas and makes the huge body of water polluted and exterminate sea creatures. Large amount of oil pollutants in land, air and water affects the environment.

Self-Check 1	Written Test

1 What materials can be reused?

1 What are the storage methods?

3 What is cleaning and maintenance?

Information Sheet-2	Remove waste and scrap

Remove waste and scrap

Scrap consists of recyclable materials left over from product manufacturing and consumption, such as parts of vehicles, building supplies, and surplus materials. Unlike waste, scrap has monetary value, especially recovered metals, and non-metallic materials are also recovered for recycling. Waste and scrap is removed following workplace procedures

Scrap consists of recyclable materials left over from product manufacturing and consumption, such as parts of vehicles, building supplies, and surplus materials. Unlike waste, scrap has monetary value, especially recovered metals, and non-metallic materials are also recovered for recycling . ways to reduce waste in the workplace

1. Go (nearly) paperless. While recycling is helpful, the biggest impact comes from using less paper in the first place. ...
2. Keep a paper recycling bin within arm's reach. ...
3. Print smarter. ...
4. Provide real dishes and silverware. ...
5. Get rid of the K-Cup machine. ...
6. Buy in bulk. ...
7. Reuse binders and file folders. ...

Create a recycling center.

Follow the scheme:

1. Collect material. To run a scrap metal yard, you have to stock up on raw supplies. ...
2. Create a honey trap. A premise that is good-looking and easily accessible will immediately attract a lot of customers. ...
3. Smelt. ...
4. Provide safety. ...
5. Buy insurance. ...
6. Work the budget. ...

Practice.

What general waste in an automotive workplace can be recycled? Recycling general waste

General waste includes solid non-hazardous wastes commonly found in any business such as cardboard, metals, plastics and glass. Most general waste can be recycled.

Self-Check 2	Written Test

1 Want to dispose scrap metal?

2 What are scrap materials?

Information Sheet-3	Clean and inspect equipment and work area

Cleaning and Inspecting Equipment

Generally, equipment of all types should be cleaned at the location of last use before being moved to a new location. If this is not possible, arrange for cleaning at a facility that is specifically designed for equipment cleaning.

If equipment is used at a location known to be infested with an invasive species, the equipment should undergo a preinspection, followed by thorough cleaning, and a final inspection before being moved off the worksite.

At the new location, the equipment should be inspected again, preferably by someone other than the original inspector before the equipment is placed into service. If, on re-inspection, contamination is found on the equipment, do not allow the equipment entry on the new worksite; either return the equipment to the location of last use for additional cleaning or arrange for cleaning at a location that is specifically designed for equipment cleaning.

the chemical and physical properties of the contaminant, as well as the toxicity and concentration of the hazardous material and the amount of oxygen present. Other selection factors are nature and extent of the hazard, work rate, area to be covered, mobility, work requirements and conditions, as well as the limitations and characteristics of the available respirators.

Air-purifying respirators use filters or sorbents to remove harmful substances from the air. They range from simple disposable masks to sophisticated devices. They do not supply oxygen and must not be used in oxygen-deficient atmospheres or in other atmospheres that are immediately dangerous to life or health (IDLH).

Atmosphere-supplying respirators are designed to provide breathable air from a clean air source other than the surrounding contaminated work atmosphere. The time needed to perform a given task, including the time necessary to Clean and inspect equipment and work area Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures Equipment must be used in line with specifications accompanying the NIOSH certification.

When selecting respirators, employers must consider enter and leave a contaminated area, is an important factor in determining the type of respiratory protection needed. On the other hand, an atmosphere-supplying respirator that supplies breathable air from an air compressor through an air line can provide protection for extended periods.

If the total concentration of atmospheric particulates is low, particulate filter air-purifying respirators can provide protection for long periods without the need to replace the filter. Where there are higher concentrations of contaminants, however, an atmosphere-supplying respirator such as the positive-pressure SAR offers better protection for a longer period.

Respirators must not impair the worker's ability to see, hear, communicate, and move as necessary to perform the job safely. This may restrict climbing and movement in tight places and the added weight of the air cylinder presents an additional burden to the wearer.

The volume of air supplied to meet the breathing requirements is very significant when using atmosphere-supplying respirators such as self-contained and airline respirators that use cylinders because this volume

determines their operating life.

The peak airflow rate also is important in the use of a constant-flow SAR. The air-supply rate should always be greater than the maximum amount of air being inhaled in order to maintain the respiratory enclosure under positive pressure.

Higher breathing resistance of air-purifying respirators under conditions of heavy work may causer the user breathing difficulty, particularly in hot, humid conditions. To avoid placing additional stress on the wearer, use the lightest respirator possible that presents the least breathing resistance.

Additional tips include:

1. Ensure all spills are immediately cleaned up. ...
2. Maintain clean light fixtures to improve lighting efficiency.
3. Keep aisles and stairways clear. ...
   Regularly inspect, clean and repair all tools .Effective housekeeping can help control or eliminate workplace hazards. ... It also requires paying attention to important details such as the layout of the whole workplace, aisle marking, the adequacy of storage facilities, and maintenance.

Through a critical examination of the workplace, inspections help to identify and record hazards for corrective action. People go to work every day, but don't expect to be injured. Rather, they expect their employer to provide a safe work environment and to ensure protection from job hazard she three basic requirements for good housekeeping are proper layout and equipment, correct materials handling and storage, and cleanliness and order.

Correct Materials Handling and Storage.

A workplace inspection is a planned event in which the workplace is inspected to identify potential hazards. It is the best way of proactively identifying hazards before they have the ability to cause an injury. assess the safety of current activities in your workplace;

1. look for opportunities to improve on your current OHS systems;
2. identify immediate or potential hazards;
3. provide feedback on good safety practices;

Respond immediately to any unsafe situation or activity; and. Objective: Given cleaning solvents, rags, brooms, air compressor, washing pan and safety apparel, you will clean tools and work area and observe Occupational Health and safety practices to the satisfaction of your trainer.

Instructions:

A. **Tools**

1 Wear protective clothing and goggles.

2 Gather the tools to be cleaned in the designated area for cleaning.

2 Segregate the tools according to the kind of dirt they have.

3 Measure and pour enough amount of cleaning solvent to the washing pan.

4 Submerge the tools in the washing pan.

5 Use paint brush to remove the dirt from the tool

. **Work Area**

1 Wear protective clothing and goggles.

2 If there is dirt on the floor such as paint, used oil, grease, rust, etc., remove it first using the appropriate cleaning solvent.

3 Use the air compressor to dry the floor and the broom in cleaning the remaining dirt in the work area.

Title: Labelling, Segregating, Placing and Disposing Wastes

Objective: Given the supplies and materials needed, you will label, segregate and dispose wastes properly.

Instructions:

1. Gather the following materials:
   - Carolina
   - Glue
   - pair of scissors
   - waste receptacles of different colours – Green, Red and Blue

2, Using a computer, make labels for the three types of wastes-Biodegradable, No biodegradable and Recyclable- with the following specifications: Font style- Arial and font size- 48. Print the name in a Carolina and cut with a dimension of 1" x 12"

2. Label the waste receptacles as follows:
   - Green – Biodegradable

- Red – No biodegradable
- Blue – Recyclable

3. Segregate the waste materials according to types and place them in their proper containers.

4. Dispose the waste materials in the designated area:
   - Compost pit – Biodegradable
   - Land fill – No biodegradable
   - Junk shop – Recyclable

Objective: Given a tool cabinet and a tool rack, you will arrange and store tools and equipment accordingly.

Instructions:

1. Classify the tools and equipment according to types.
2. Arrange the tools by types in the shelves/racks.
3. Place equipment in designated places or location.

Objective: Using a computer and given a Carolina, pair of scissors and glue, please make and post visible corresponding labels on tools and equipment.

Instructions:

1. Prepare necessary tools, supplies and materials.
2. Determine the number of tools and equipment to be labeled according to type.
3. In the computer, type the name of the tools using arial font style and a font size of 60.
4. Print in the Carolina the name of the tools and equipment.

Objective: Given a record book, bull pen and correction fluid, please log-in tools and equipment in the record book satisfactorily.

Instructions:

1. Enter the item number of tools and equipment.
2. Specify the quantity-number of tools/equipment available.
3. Specify unit (e.g. pcs, dozen, unit, etc.)
4. Write the description including the:
5. Indicate the date of issuance- data to be taken from the Memorandum Receipt.
6. Submit your record book to your trainer for assessment.
7. Lock the workshop.

Objective: Given the Record Book/Memorandum Receipts, Inventory form, ball pen and correction fluid, you Swill conduct inventory of tools and equipment, identify, record and report damaged tools and equipment and give repair recommendations if reparable.

Instructions:

1. Secure inventory forms/memorandum receipt of tools and equipment.
2. Study the parts of the Inventory Form
3. Check whether the list of tools and equipment in the memorandum receipt tallies with the existing tools and equipment found in the workshop including their specifications and condition.

Self-Check 3	Written Test

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

1. What are the basic requirements of wheels? (1 point)

2. What is the difference between driving and non-driving wheels? (2 points)

3. What is hub (10 points)

Information Sheet-4	Tag and faults identify unserviceable equipment

Tag and faults identify unserviceable equipment must be used in line with specifications accompanying the NIOSH certification.

When selecting respirators, employers must consider the chemical and physical properties of the

contaminant, as well as the toxicity and concentration of the hazardous material and the amount of oxygen present. Other selection factors are nature and extent of the hazard, work rate, area to be covered, mobility, work requirements and conditions, as well as the limitations and characteristics of the available respirators.

Air-purifying respirators use filters or sorbents to remove harmful substances from the air. They range from simple disposable masks to sophisticated devices.

The time needed to perform a given task, including the time necessary to enter and leave a contaminated area, is an important factor in determining the type of respiratory protection needed. On the other hand, an atmosphere-supplying respirator that supplies breathable air from an air compressor through an air line can provide protection for extended periods.

If the total concentration of atmospheric particulates is low, particulate filter air-purifying respirators can provide protection for long periods without the need to replace the filter. This may restrict climbing and movement in tight places and the added weight of the air cylinder presents an additional burden to the wearer.

Another factor to consider when using respirators is the air-supply rate. The peak airflow rate also is important in the use of a constant-flow SAR. The air-supply rate should always be greater than the maximum amount of air being inhaled in order to maintain the respiratory enclosure under positive pressure.

Higher breathing resistance of air-purifying respirators under conditions of heavy work may causer the user breathing difficulty, particularly in hot, humid conditions. To avoid placing additional stress on the wearer, use the lightest respirator possible that presents the least breathing resistance.

SCBAs and some chemical canister respirators provide a warning of remaining service time.

The user should understand the operation and limitations of each type of warning device.

Self-Check 1	Written Test

1, how to control the Tag and faults identify unserviceable equipment

- ✓ **To the short answers**

2 ,_____ use filters or sorbents to remove harmful substances from the air.

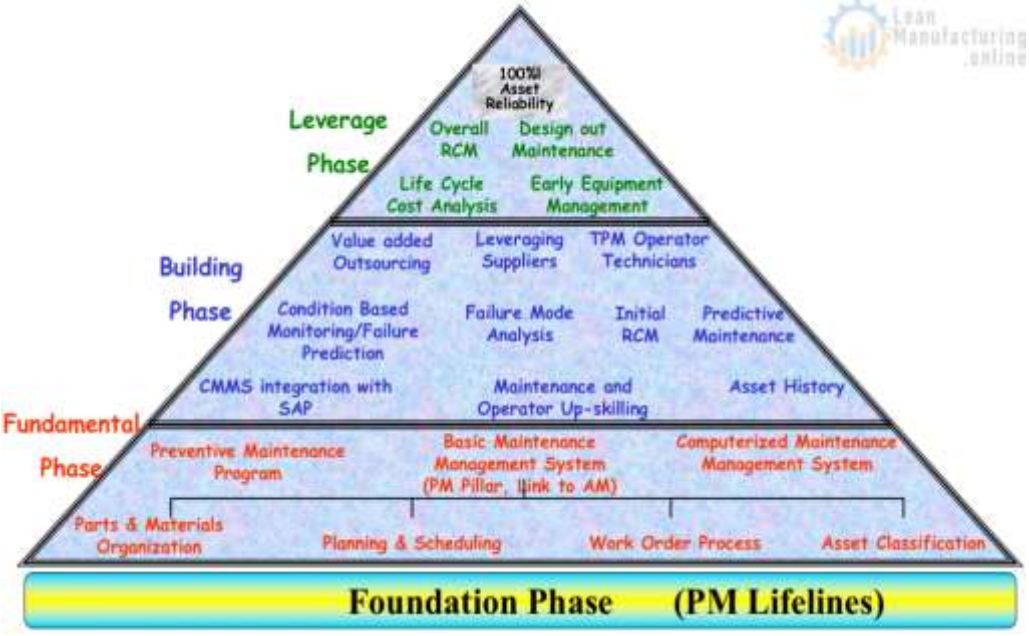
This may restrict _____and _____ in tight places and the added weight of the air cylinder presents an additional burden to the wearer

Information Sheet-5	**Completed operator maintenance**

Completed operator maintenance

A Standard Maintenance Procedure, or SMP, is a written set of instructions that specifies how a maintenance procedure is to be performed. ... This concept holds true whether you're driving a car, landing an airplane, performing heart surgery or executing maintenance procedure.

What is preventive maintenance checklist? Preventive maintenance is defined as regularly scheduled inspections, tests, servicing, replacements, repairs and other tasks intended to help reduce the impact and frequency of equipment failures. This includes scheduled preventive maintenance, predictive maintenance and inspection activities.



How do you maintain heavy equipment? Here are five top tips for large machinery maintenance:

1. Stay on top of large machinery operator training. ...
2. Add and test lubricants frequently. ...
3. Check for signs of wear. ...
4. Keep large machinery clean, and maintain a clean environment. ...
5. Have a maintenance and repair schedule, and keep good records.

Self-Check 1	Written Test

1 What is maintenance procedure?

2How do you maintain heavy equipment?

Here are five top tips for large machinery maintenance?

Information Sheet-5	Maintain tool and equipment

Maintain tool and equipment Types of Tools and Equipment

There are three main types of tools/equipment in the shop. One type is known as hand tools because your hand supplies the energy to operate them. The other type is called machine or power tools/equipment. Electricity, compressed air, or hydraulic pressure operates these tools. The last type is referred to as measuring tools.

- Hand tools

They include screwdrivers, hammers, pliers, wrenches and pullers.

1. Screwdrivers are used to drive, or turn screws. The most common type has a single flat blade for driving screws with slotted heads.
2. Hammers are the ones you use most in the shop. They should be gripped on the end of the handle.
3. Pliers are special types of adjustable wrenches. The two legs move on a pivot so that items of various sizes can be gripped.
4. Wrenches are used to turn screws and nuts and bolts with hexagonal heads. “Hexagonal” means six-sided. A variety of wrenches is used in the shop.
5. Pullers are used to remove gears and hubs from shafts, bushings from blind holes, and cylinders’ liners from the engine blocks.

- Power tools/Equipment

A. Electric tools
   1. Electric drill has an electric motor that drives a chuck. The chuck has jaws that can be opened and then closed to grip a drill kit.
   2. Grinding wheels can be either bench-mounted or installed on a pedestal. It may have a grinding wheel and a view wheel, or two grinding wheels.
   3. Vacuum cleaner is used for cleaning the floor and also for cleaning car interiors after service.

B. Pneumatic tools
   1. Air chisel uses reciprocating motion to drive a cutting hammering tool. An air hammer drives a chisel to cut off a nut that has frozen to a stud. It can be used with a variety of tools-cutters, punches-to do many jobs.
   2. Air impact wrenches used a pounding or impact force to loosen or tighten nuts or bolts.

C. Hydraulic tools

1. Car lifts-single or double post- both have pads that must be positioned under the designated lift points of the car frame.
2. Hydraulic floor jack is used to raise the lifting saddle. A lever on the handle releases the pressure so that the saddle and load will settle back down.
3. Portable crane is used for such jobs as lifting the engine out of the car. It is operated hydraulically by a hand pump.
4. Hydraulic press is used to apply force on bent parts to straighten them. It can also do such jobs as press brushing in and out and press out rivets.

❖ Measuring tools

1. Thickness gauges are strips or blades of metal of various thicknesses.
2. Wire gauges are made of round wire. They are used to measure spark-plug gaps and other openings.
3. Micrometer is a precision measuring tool that can measure thickness in thousandths or ten-thousandths of an inch (USC system), or in hundredths of a millimetre (metric system)

1.1 Harmful Effects of Wastes

❖ Solid wastes materials

The following are the harmful effects of the solid waste materials if disposed improperly in the environment

8. Clogging of public sewerage system which eventually causes flooding
9. Breeding grounds for flies, mosquitoes and other disease-carrying insects
10. Pollution of land, water and air
11. Poor health or even death of human beings, animals and other living things
12. Negative impression to our country.
13. Negative impact to our tourism industry.
14. Poor economy

- Used oil It contains hydrocarbons, carbon monoxide, sludge and other toxic materials that pose health hazards to human beings and other living things. When inhaled, or taken internally. Used oils when disposed in the public sewerage system find its way to the river and the seas and make the huge body of water polluted and exterminate sea creatures. Large amount of oil pollutants in land, air and water affects the environment.

Why Maintain Inventory of Tools and Equipment

The most importance advice you can be given at the beginning of your career is to purchase top-grade tools. These are made from high-quality steel and manufactured to precision. Special care is necessary so that the tools/equipment can be properly maintained thus preventing loses. Since you, the technician must work with your tools daily, regular inventory of tools/equipment is very important.

The initial cost of even a minimum number of tools is high but the accompanying warranty guarantees satisfaction and many years of service. It is better, in the long run, to start with a few carefully selected tools that will take care of your most common needs and then gradually build-up to a complete set. It is sometimes hard to identify and memorize the huge number of tools and equipment in the workshop, hence maintaining the inventory record is of great value.

Do Not Use the equipment -

- without reading the manual of instructions
- outside of the intended limit
- disabling safety system and removal of hazard notices
- modification and conversion of the instrument

- open with instruments / tools, unless specified or required
- use of accessories from other manufacturers without approval

Care and Support

- Never carry the instrument loose in a vehicle. It can be affected by shock and vibration. Make sure it is carried in its case always
- When dispatching the instrument make sure it is complete package always
- When transporting the instruments make sure it is protected from shock and vibration

Storage

- Make sure the instrument is dry before storing.
- Damp instrument must be unpacked

Cleaning

- Use dry clean, soft and stain free cloth for cleaning. If necessary moisten the cloth with pure alcohol. Use no other liquids.

Automotive Tools & Garage/Shop Equipment

Every automotive enthusiast and professional mechanic knows that it's nearly impossible to get the job done without the right tools. That's why Summit Racing is your place to go for garage equipment, specialty tools, and everyday problem solvers. We have everything a well-stocked shop needs: a huge selection of hand tools, powerful air tools and compressors, welding equipment and plasma cutters, engine stands, jacks, dollies, and much more. Looking for a place to put all of your new toys? We have the tool cabinets and storage solutions you need to keep it all organized!

Self-Check 1	Written Test

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

1. What is good housekeeping? (1 point)

2. Why good housekeeping matters? (2 points)

3. Give 5 accidents and their causes as a result of bad housekeeping (10 points)

Sequence of preparing clean and organized service work station

Steps to be undertaken to meet work of clean work area for repair

Learning Guide for Vehicle Service & Repair Level II Version: 1 Revision: 0

Operation sheet	Learning Guide #5

Operation Title: Removing and installing Wheel and tire Purpose: to check the condition of the wheel hub and break system components Equipment, Tools and Materials: safety stand, hydraulic jack, cross wrench, chalk, and vehicle with wheel Procedure

1. Park the vehicle on a level surface.
2. Remove the jack, tire iron and, if necessary, the spare tire from their storage compartments.
3. Check the owner's manual for the jacking points on your vehicle. Then, place the jack in the proper position.
4. If equipped with lug nut trim caps, remove them by either unscrewing or pulling them off the lug nuts, as appropriate. Consult the owner's manual, if necessary.
5. If equipped, remove the wheel cover or hub cap. In most cases there is a groove along the cover's edge, insert the tapered end of the tire iron in the groove and pry off the cover.

LAP Test Practical	**Demonstration**

Name: _____ **Date:** _____ **Time started:** _____ **Time finished:** _____

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

Task 1: Clean the given tools and equipment.

Task 2: Using the given template, list the different wastes produced and accumulated in a particular technology area, then identify whether these are for composting, recycling or disposal.

List of Reference Materials

1. AUTOMOTIVE TECHNOLOGY Principles, Diagnosis, and Service FOURTH EDITION by James D. Alderman, publishing as Pearson Education, in 2012
2. Automobile Mechanical and Electrical Systems First published 2011, Copyright © 2011 Tom Denton. Published by Elsevier Ltd. All rights reserved
3. Bob Goodman and Rodney G. Brown (3M). "Electrical Taping Skills: A Lost Art?", *EC&M*, p.2
4. https://www.pfjones.co.uk/PCT/FD3166.pdf
5. Kovacic, Michael, and Karl Cunningham. "Effective Electrical Safety Program Training in Multi-Lingual/Cultural Environments." *IEEE Transactions on Industry Applications*(2019).
6. http://www.mhi.org/fundamentals/material-handling
7. Classroom Manual for Automotive Electricity And Electronics Fifth Edition Barry Hollembeak © 2011 Delmar, Cengage Learning