



Participant Guide

AUTOMOTIVE ELECTRICIAN

LN AUT VSE AEL AL/RW L4 ENG VER 1.00

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Foreword

LabourNet is a social enterprise that creates sustainable benefits for workers in the informal sector, by taking an end to end solution focused on plugging gaps in the eco-system to the market, to address all the challenges faced by the unorganized sector workforce today. It is observed that there is lot of scope for employment in the automotive sector particularly in vehicle servicing sub sector for candidates who possess the necessary knowledge and skills. In vehicle servicing sub sector there is dearth of trade man power in electrical servicing. To fill this gap this course on Automotive Electrician is created to upgrade the skills of practicing electrician in automotive industry for becoming eligible for higher wages and better standard of living.

This course is designed for the training model known as instructor led model. Trainee will be provided the knowledge inputs through lecture either in the class room or at the garage premises followed by practical training at the center with available facilities and at the garage.

This course for automotive electrician is in general aligned Qualification Pack for automotive electricians vide Reference ID: ASC/Q 1408 published by NSDC and covers all the operations carried out by an electrician attending four wheelers on the roads in India. Servicing of technologically advanced four wheelers such as vehicles with automatic systems, transmissions, vehicles with latest technologies pertaining to engine such as fuel cell technology and intelligent navigation and transport systems.

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1. Key Competencies

Upon successful completion, the Learners will be able to:

1. Carryout overhauling of engine management system such as fuel cell, remote diagnostics, CRDI, drive by drive, close loop system, etc. following the SOP.
2. Carryout overhauling of braking system such as ABS, etc. following the SOP
3. Carryout overhauling of electrical wire harness such as lighting, ignition and AC system following the SOP
4. Maintain work area clean and tidy
5. Work effectively in a team
6. Follow safety precautions while servicing

PREVIEW

Module 1- Overview of automotive industry and generic skills

Module Objectives

By completing this module the trainee would be able to:

- Explain the evolution and growth of 4 wheeler
- Classify automobile based on
 - Purpose
 - Fuel used
 - Capacity
 - Drive
 - Wheel and axel
 - Suspension
 - Transmission
- Explain the growth of 4-wheeler industry
- Describe the opportunities of automotive electrician in an industry
- Describe role of automotive electrician in an industry
- Communicate effectively
- Listen effectively
- Write a professional resume and applying through various job related portals
- Describe work ethics
- Describe the grooming standards at the work place

Session Plan 1- Introduction to automotive industry and automotive electrician

Session Objectives

By completing this module the trainee would be able to:

- Explain the evolution and growth of 4 wheeler
- Classify automobile based on
 - Purpose
 - Fuel used
 - Capacity
 - Drive
 - Wheel and axel
 - Suspension
 - Transmission
- Explain the growth of 4-wheeler industry
- Describe the opportunities of automotive electrician in an industry
- Describe role of automotive electrician in an industry

Relevant Knowledge

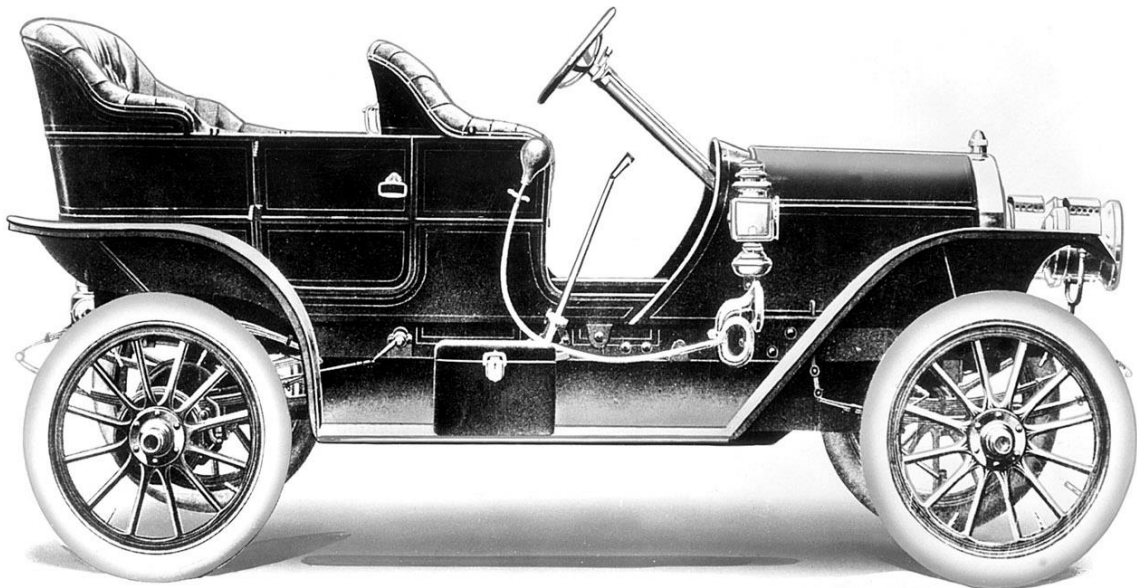
1.0 Introduction to Automobile

1.1 Introduction to Four wheeler

The era of “Automobile” starts in the mid of 17th and 18th century, strictly speaking, in 1760s. In the beginning “steam engine automobile” was created for the means of human transport.

Later on an internal combustion engine is used for a self-propelled vehicle to transport passengers and goods too.

Examples: Car, Bus, Truck, Jeep, Tractor, Van etc.,



In general, the modern automobile is essentially a transportation equipment unit consisting of a “frame” supporting the “body” and certain “power developing and transmitting units” which are further supported by “tyres and wheels” through “springs and axles”.

Engine is the chief component of an automobile. It supplies the power, which is delivered by the “transmission system” to the wheels through the clutch or fluid coupling

The different names for the automobile are:

- Auto
- Automobile
- Auto-car
- Auto buggy
- Car
- Motor

- Motor car
- Motor vehicle
- Motor coach
- Motor wagon
- Horseless coach

1.2 Evolution and growth of four wheeler segment

Evolution:

AUTOMOBILE

1600 Sails on land! A chariot driven by the wind, built by Simon Stevin in Holland.

1769 The first vehicle to move under its own power (steam), by Nicolas Cugnot of France.

1827 Steam wagon of Onesiphore Pecqueur, France, allowed for difference in rear wheel speeds.

1832 Steam vehicle by W. H. James, England. It had the first three-speed transmission.

1902 The first automobile to be produced in quantity—an Oldsmobile with a curved dash.

1911 The first electric self-starter, invented by C. F. Kettering, went into production.

1928 Synchro-mesh transmission was introduced. It made gear shifting without clashing possible.

1934 Knee-action, for smoother riding, and solid steel turret tops, for safety, came in.

1940 "Sealed Beam" headlamps became standard; and automatic transmission was mass produced.

1949 New high-compression engines were introduced, and bodies acquired bigger areas of glass.

6304 General Motors Corp.

1.4 Role of automotive electrician

Automotive electricians install, maintain and repair electrical wiring and computer-based equipment in motor vehicles, caravans, trailers, earthmoving equipment, mining equipment and agricultural equipment.

Automotive electricians perform the following tasks:

1. work with computer-controlled engine management systems
2. service, identify and repair faults on electronically controlled vehicle systems such as electronic fuel injection, electronic ignition, anti-lock braking, cruise control, automatic transmission, airbags and air conditioning
3. install electrical equipment such as gauges, lighting, alternators and starter motors in vehicles
4. install electrically operated accessories such as radios, heating or demisting equipment, air conditioners, driving lamps and anti-theft systems
5. refer to circuit diagrams, and use meters and test instruments to find electrical faults
6. adjust engine control systems and timing to ensure vehicles are running at peak performance
7. test, recondition and replace faulty alternators, generators, starter motors and related items such as voltage regulators and batteries
8. repair or replace faulty ignition, electrical wiring, fuses, lamps and switches
9. use hand tools, specialized electrical tools, instruments and machines, including drills, grinders, presses and lathes
10. solder or weld when repairing electrical parts
11. sell and install electrical parts and accessories
12. Install repair and service air condition system.

Session Plan 2 – Work place skills

Session Objectives

At the end of the session, participants will be able to:

- Communicate effectively
- Listen effectively
- Write a professional resume and applying through various job related portals
- Describe work ethics
- Describe the grooming standards at the work environment

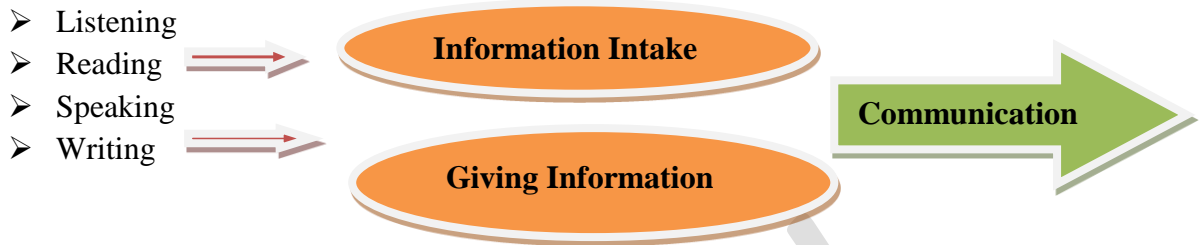
Relevant Knowledge

2.0 Workplace Skills

2.1 Communication Skills

Introduction

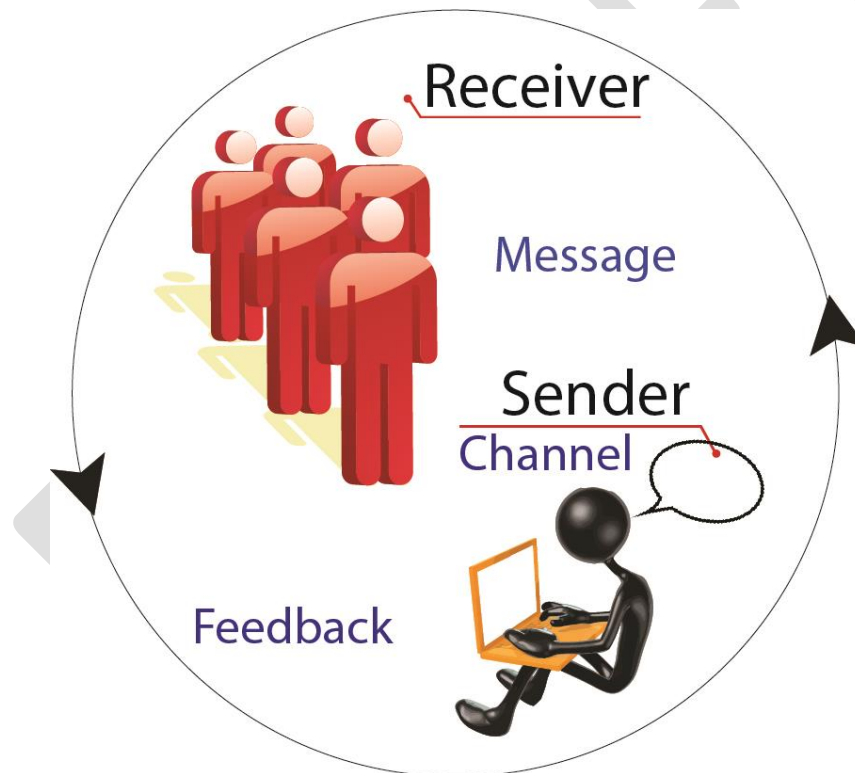
The basic skills required for people at any workplace are:



What is communication?

Communication is sending a message by speaking, writing or expressing.

Components of a communication: Sender, Channel and Receiver.



Communication could be broadly divided in three forms:

1. Verbal/Oral Communication
2. Non-Verbal Communication
3. Written Communication

Points to remember:

1. The automotive industry is one of the key sectors of the Indian economy.
2. Engine is the chief component of an automobile
3. The Indian automotive manufacturing industry plays a vital role in upheld of the Indian economic condition.
4. Automotive service offers many excellent opportunities for men and women who know automobiles.
5. Communication is sending a message by speaking, writing or expressing.
6. The act of communicating a message, idea, feeling or thought by use of mouth is called Verbal Communication.
7. Non Verbal Communication refers to the communication sent via facial expressions, body language, eye contact, gestures or any medium other than speaking and writing.
8. Any form of interaction that makes use of written words to communicate either in printed or handwritten form is called as Written Communication.
9. Ethical behavior forms the basis of human life.
10. Policies and Procedures are the strategic link between the Company's Vision and its day-to-day operations.

NOTES

Use the blank space provided below to make important notes based on your understanding of the topics or anything which is important for you to remember.

Exercise sheet

Answer the following questions.

1. _____ is exchange of information between people. It can be in the form of oral words, written words, drawings or physical actions

- a. Communication
- b. Reading

2. Explain different forms of communication?

Module 2- Carryout electrical and electronic repairs and overhauling of vehicle

Module Objectives

By completing this module the trainee would be able to:

- Describe Electricity
- Define insulator, conductor, semi-conductor, voltage and atom
- Explain current flow theories
- Describe fuel injection system and its types
- Describe Air Conditioning System
- Explain Steering system
- Explain the working principle of brake system
- Describe Suspension system and its types
- Describe and identify Safety systems in a vehicle
- Identify components in Clutch System
- Demonstrate battery service
- Service starter motor
- Identify and solve trouble shootings in fuses and lighting system
- Demonstrate Servicing of charging system
- Describe A/C system
- Rectify and repair trouble shootings in A/C system

Session Plan 1 – Basics of electrical and electronics

Session Objectives

By completing this module the trainee would be able to:

- Describe Electricity
- Define insulator
- Define conductor
- Define semi-conductor
- Define voltage
- Describe Atom
- Explain current flow theories

Relevant Knowledge

1.0 Basics of electrical and electronics

Principle of Electricity and Electronics



1.1 Electricity

Electricity is a form of energy generated by conversion of other forms of energy like Nuclear, Thermal, and Chemical & Mechanical (Hydraulic) Energy.

Flow of electric charge is called as electricity.

In other words flow of electric current along a conductor is called as electricity.

The current takes the form of free electrons that transfer their energy from one atom to the next. Hence more free electrons a material has better it conducts.

There are primary three electrical parameters

1. The Volt

The pressure that is put on free electrons that causes them to flow is known as electromotive force (EMF).

The volt is the unit of pressure, i.e., the volt is the amount of electromotive force required to push a current of one ampere through a conductor with a resistance of one ohm.

2. The Ampere

The ampere defines the flow rate of electric current.

3. The Ohm

The ohm is the unit of resistance in a conductor. Three things determine the amount of resistance in a conductor: its size, its material, e.g., copper or aluminium, and its temperature.

A conductor's resistance increases as its length increases or diameter decreases. The more conductive the materials used, the lower the conductor resistance becomes. Conversely, a rise in temperature will generally increase resistance in a conductor.

Session Plan 2 – Vehicle Management System

Session Objectives

By completing this module the trainee would be able to:

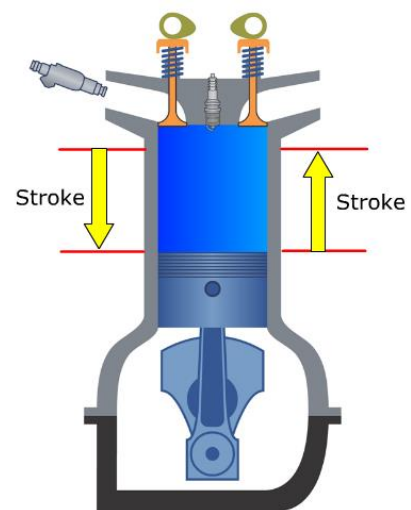
- Describe engine and its functions
- Identify engine components
- Describe fuel injection system and its types
- Describe Air Conditioning System
- Explain Steering system
- Explain the working principle of brake system
- Describe Suspension system and its types
- Describe Safety systems
- Identify components in Clutch System
- Identify and explain the various components in brake system
- Identify Active and Passive safety system in a vehicle

Relevant Knowledge

2.0 Vehicle Management System

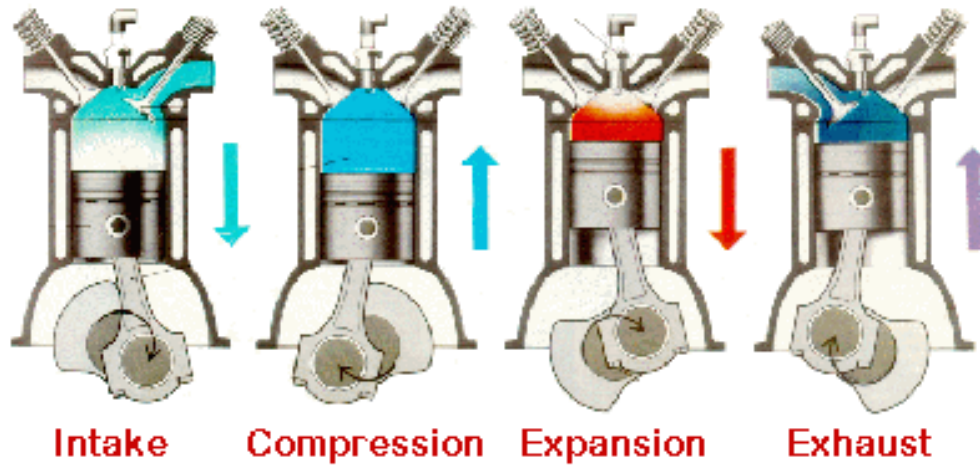
2.1 Engine

- Function of the engine is to produce power
- The entire process of burning the fuel and generating power in the engine is completed in 4 steps or 4 strokes which gives it a name of 4-stroke engine
- Piston travel from top dead center to bottom dead center or bottom dead center to top dead center is called stroke



Four stroke petrol engine

Four stroke petrol engine is an example of internal combustion engine in which the piston completes four separate strokes namely



- Suction/Intake stroke
- Compression stroke
- Power/Expansion stroke
- Exhaust stroke

Session Plan 3 – Hand tools and Power tools

Session Objectives

At the end of the session, the trainee will be familiarizing:

- With various tools used and its working procedure.
- To identify right tool required for a particular operation.
- With various equipment, feature and its operating/working procedure

Relevant Knowledge

3.0 Hand tools and Power tools

3.1 Hand Tools

The various hand tools used by an automotive electrician is listed below

- Screwdriver
- Spanners
- Hammers

- Pliers
- C-clamp
- Feeler gauge
- Battery hydrometer

SCREW DRIVER

Screwdriver is a tool used for driving or removing screw.

Screwdriver will consists of a handle, shaft and tip which are used against the screw head to turn it.

Handle material can be wood, metal or plastic usually in a hexagonal, square or oval in cross-section which will increase the grip and avoids rolling.

Screwdrivers come in many shapes and designs, but the important thing to remember when choosing a screwdriver is that the tip must fit the screw slot. When it comes to stile select a handle that feels most comfortable.



Types of screwdrivers



SPANNERS





A spanner is a hand tool with jaws or opening or a ring at one end or at both ends for tightening or slackening nuts and bolts and screw heads. It is made of drop forged, high tensile or alloy steel and heat treated for strength.

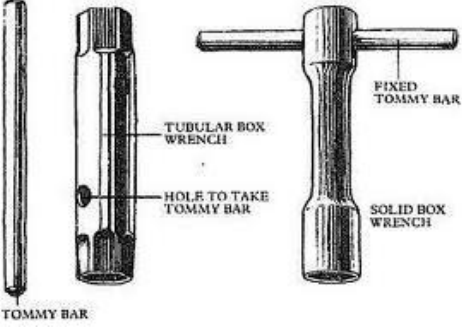



Spanner is usually with double-ended with a different-sized opening at each end

Spanner is a tool used to provide a grip in applying torque to turn object such as nuts and bolts or in other words to keep them from turning.

Spanners are usually made from chromium-vanadium alloy tool steel.

Spanners are frequently coated with chrome to avoid corrosion and it also makes cleaning easy.

Image	Name	Description
	Single ended Spanner	A single – end spanner is one that fits only one size bolt, head, or nut. The opening is generally offset at a 15 degree angle to permit complete rotation of a hexagonal nut in only 30 degree by flopping the spanner.
	Double-end Spanner	A double end spanner has a different size opening at each end. It is used in the same manner as a single end spanner.
	Adjustable Spanner	The Adjustable spanner is adjustable to various size nuts and is particularly useful for odd size nuts.
	Ring Spanners	These spanners have hole on one or both ends. These spanners are used where application of open ended spanners is not possible.

 <p>TOMMY BAR TUBULAR BOX WRENCH HOLE TO TAKE TOMMY BAR FIXED TOMMY BAR SOLID BOX WRENCH</p>	<p>Tubular Box Spanners</p>	<p>These spanners are generally used where hexagonal bolt or nut is to be fitted in some depth</p>
	<p>Socket spanners</p>	<p>These spanners are generally used when hexagonal bolt or nut is to be fitted in some less depth.</p>
	<p>Pin Hook spanners</p>	<p>It is also called as ‘C’ spanner which is generally used on circular nut having a slot.</p>
	<p>Allen Key</p>	<p>A hex key or Allen key or wrench is a tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head.</p>

Points to remember:

1. Clean dirty and corroded battery terminals and connectors with a mixture of hot water and baking soda. Use wire brush to remove corrosion.
2. Hydrometer is used to check the specific gravity of electrolyte.
3. A fully charged battery will show 12.6 volts and a totally discharged battery will show less than 12.0 volts.
4. The lighting system should be checked whenever the vehicle is brought into the shop for repairs
5. Fuses are used for protecting the electrical equipment and circuits against the effects of excessive currents
6. A properly operating charging circuit is necessary for the correct operation of an automobile’s entire electrical system
7. The tone of and electromagnetic horn can be adjusted
8. The climate control system is designed to provide comfort for the driver and passengers.

NOTES

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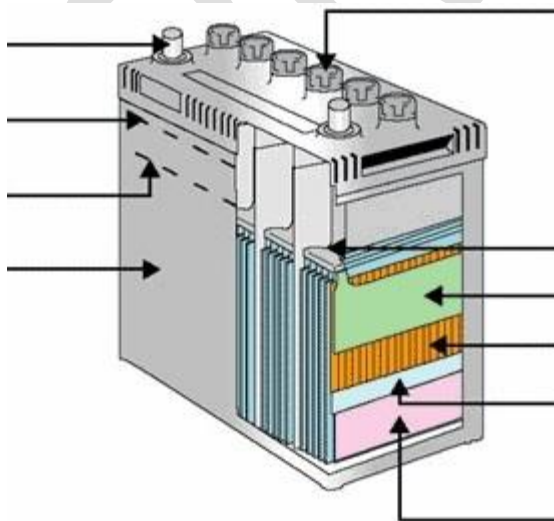
Exercise sheet

Answer the following

1. Write various precautions to be observed while handling lead acid battery?

2. Write the procedure of inspection and cleaning of a battery?

3. Identify the below parts of a battery?



1. Terminal
2. Upper level
3. Lower level
4. Container.
5. Plug
6. Strap
7. Negative plate
8. Separator
9. Glass mat
10. Positive plate

Module 3- Plan and organize work to meet expected outcome

Module Objectives

By completing this module the trainee would be able to:

- Maintain work area clean and tidy
- Manage time, materials and cost effectively
- Follow organization's policies and procedures

Session Plan 1 – Planning and Organizing

Session Objectives

By completing this module the trainee would be able to:

- Maintain work area clean and tidy
- Manage time, materials and cost effectively
- Follow organization's policies and procedures
- Obtain guidance from seniors when necessary

Relevant Knowledge

1.0 Planning and Organizing

1.1 Planning

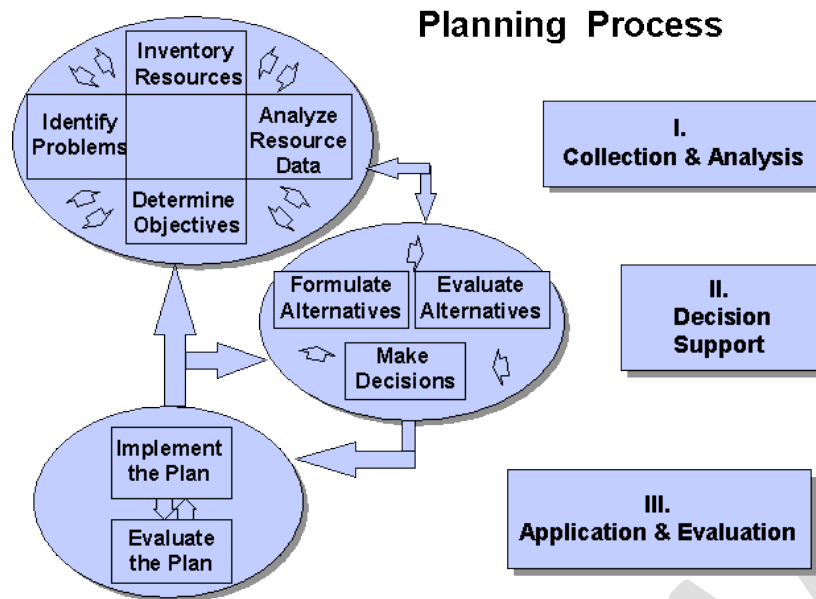
Planning is the process/an act to achieve desired goals of an organization. It is a process of achieving the optimum balance of needs with the available resources. The planning process involves:

- Identifying the goals/objectives to be achieved
- To frame the strategies to achieve the goals of the organization.
- It creates the means required

Planning combines with forecasting of developments with the preparation of scenarios of how to react to them.

Planning Process

We can outline a three-step result-oriented process for planning:



In organizations, planning is a management process, but it can be practiced using simple tools and methods at all the levels in the organization as well as in places like garages and service centers.

I. Collection & Analysis

In this stage of planning the technician collects necessary data required for carrying out further operations. He may do the following steps in this stage:

1. Identify the number of vehicle to be serviced for the day
2. Analyze the vehicle type, make etc.
3. Enquire about the problem associated with the vehicle
4. Decide if the service is routine or customized
5. Identify if the necessary machinery and tools required for the service is available
6. Estimate time required for completing the service and come up with a delivery date

II. Decision & support

In this stage of planning the operator evaluates all the data he has gathered in the previous stage. He formulates an action plan and considers the best alternative which is both cost and time effective. Any further support, for example if calibration of the fuel pump has to be outsourced is discussed with the supervisor.

III. Application & Evaluation

It is the final stage of planning where the actual execution of the plan takes place. The action plan and decisions taken in the previous stage is carried out on the vehicle. The problems listed during the collection stage is rectified and tested. If the problem persists the cycle repeated.

Points to remember:

1. Planning is the process of thinking about and organizing the activities required to achieve a desired goal
2. Planning increases the efficiency of an organization
3. Manpower planning, material planning, maintenance planning, enterprise resource planning are few types of planning
4. Organizing involves the assignment of tasks, the grouping of tasks into departments and the assignment of authority and allocation of resources
5. Make sure there is a place for everything and everything is its place
6. List the tasks to complete, prioritize and finish it on time
7. Policies are a statement of purpose.
8. Procedures explain how to perform tasks and duties.
9. The technician must treat confidential information as per the organization's guidelines.
10. Information security deals with the preservation of the confidentiality, integrity and availability of information
11. To complete the task accurately, the technician must follow standard procedures.

NOTES

Use the blank space provided below to make important notes based on your understanding of the topics or anything which is important for you to remember.

Exercise sheet

Answer the following

1. What is planning and List out its advantages?

2. List the different type of planning you come across in automotive service facility.

3. Write a note on Organizational skills.

Module 4 -Work effectively in a team

Module Objectives

By completing this module the trainee would be able to:

- Follow clear communication with colleagues
- Plan and coordinate with colleagues
- Work effectively in a team
- Follow organization's policies and procedures
- Work with colleagues for achieving team objectives

Session Plan 1– Working with Colleagues

Session Objectives

By completing this module the trainee would be able to:

- Follow clear communication with colleagues
- Plan and coordinate with colleagues
- Work effectively in a team
- Follow organization's policies and procedures
- Work with colleagues for achieving team objectives

Relevant Knowledge

1.0 Working with Colleagues

1.1 Coordinating with colleagues Communication

In every organization once work it is commenced continuous monitoring is done to ensure that the work is completed as per the schedule. Worker i.e.; yourself, who is directly carrying out the task has the right information and the trainer will train you in preparing the status report as per the formats provided. Sometimes the work can be divided into various activities and the status report will require ticking of what are the activities completed. In case few of the activities require long duration % of completion is to be indicated.

Typical Status Report as on -----(date) -----(time)			
Task	Start Time ----- ------(date) ----- (time)	Completion time----- -(date) -----(time)	% of completion (shade %)
Tasks	Description	Completed ----- Not completed----- (tick mark)	
1			

2			
3			
4			

Keeping all the tools and equipment in good condition is the responsibility of the worker for carrying out quality work in the stipulated time. Preferably at the end of the work, everyday today request for maintenance is to be submitted to the senior either orally or in the prescribed form. The trainer will train you in filling up the format available at the site you are working. Typical format is provided above only for information.

Site Communications

Communication is the transmission of information or message to another person or group of persons.

Site Communication can be in the form of:

- Writing
- Talking
- Gesturing
- Signaling
- Drawing
- Sound
- Touch
- Odor

Written communications are preferred for many reasons.

- letters, reports
- contracts
- sketches and drawings
- specifications
- safety signage

Oral communications

- face-to-face discussions
- group discussions / meetings
- mobile telephones / wireless phones
- Over a loudspeaker.

Visual means of communication

- Signals
- flashing lights
- barricade tapes
- Safety signs.

Body language

- hand signals;
- gestures;
- facial expressions;
- movements; and
- Posture.

Touch sensations from:

- other workers;
- faulty machinery;
- unstable structures;
- hot and cold water;
- unstable scaffolding; and
- Sharp objects.

Odors may come from:

- gases;
- glues;
- sealants;
- fuels;
- solvent;
- engine exhausts; and
- Sewage.

Points to remember:

1. Communication is the transmission of information or message to another person or group of persons.
2. An important ingredient for quality output is having good project plan
3. For personal protection, report accidents, no matter how slight, to senior or to someone in authority immediately.
4. Working effectively in a team is very important to deal with daily issues.
5. Every team member should be aware of their role in a project
6. Manager or just an executive, everyone should plan and organize work beforehand
7. It is better to focus on one job at a time for best quality work.
8. Preparing a daily to-do work list is the best way to keep a tract of the list of work for a day.

NOTES

Use the blank space provided below to make important notes based on your understanding of the topics or anything which is important for you to remember.

Exercise sheet**Answer the following**

1. -----with colleagues spoils the working environment which diverts the concentration of an employee.

- a) Good relationship b) Bad relationship C)None of the above

2. _____ is exchange of information between people. It can be in the form of oral words, written words, drawings or physical actions

- a. Communication
b. Reading

3. Why working as a team is necessary?

Module 5-Maintain a healthy, safe and secure working environment

Module Objectives

By completing this module the trainee would have gained knowledge about:

- Follow organization's current health, safety, security and environmental policies and procedures
- Define hazard
- Describe various hazards and safety precautions to be followed while servicing
- Follow organization's emergency and disaster management procedures
- Identify and recommend opportunities for improving health, safety and security

Session Plan 1 – Health, safety and security requirements

Session Objectives

At the end of the session, the trainee will be able to:

- Follow organization's current health, safety, security and environmental policies and procedures
- Define hazard
- Describe various hazards and safety precautions to be followed while servicing
- Follow organization's emergency and disaster management procedures
- Identify and recommend opportunities for improving health, safety and security

Relevant Knowledge

1.0 Health, Safety and Security requirements

1.1 Health and safety

What is Hazard?

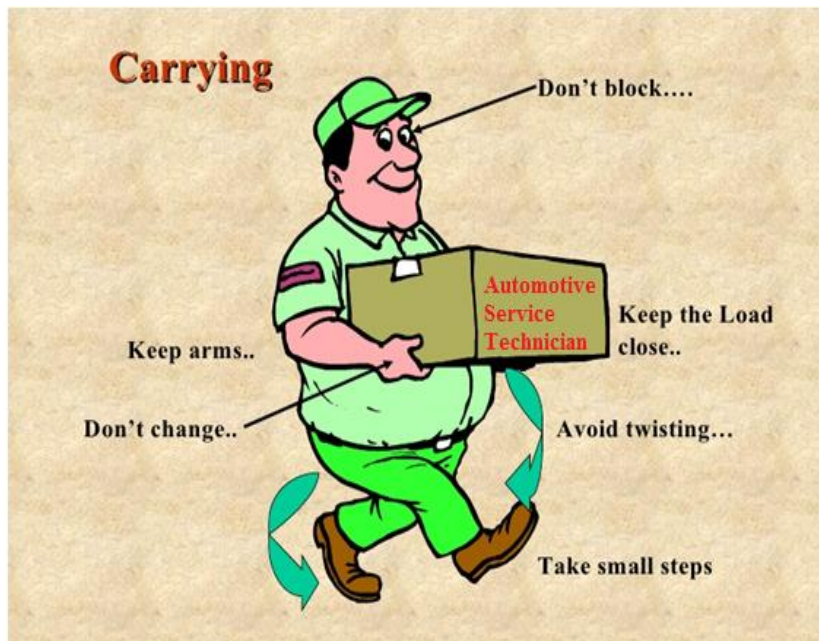
A **hazard** is a situation that poses a level of threat to life, health, property, or environment.

Automotive jobs in the workshop involves – adjusting wheel alignment, checking engine performance, checking charging systems, adjusting engine valves and many other jobs. These jobs do include variety of hazards each day, from contact with hazardous chemicals to the possibility of amputating limbs or digits with mechanical equipment. All of these jobs can be done easily and safely if you follow the safety rules.

Different types of health and safety hazards found in the workplace are discussed below:

1. Materials Handling Hazards
2. Mechanical Hazards
3. Electrical Hazards
4. Chemical Hazards
5. Radiation Hazards
6. Physical & Environmental Hazards
7. Pressurized Hazards
8. Confined Space Hazards

Material Handling Hazard



Material handling hazard	
Hazard	Precaution
<ul style="list-style-type: none"> ✓ Manual handling (Lifting, pushing, pulling, carrying, cutting, etc – wrong posture & techniques, over exert, heavy load, odd shape or large item resulting in poor grip) ✓ Usage of material handling equipment Hand tools ✓ Packing or de-packing of materials 	<p>Manual handling – Use proper lifting technique, move or carry items within personal ability, seek help, use material handling equipment.</p> <p>Usage of material handling equipment – trained on safe use of equipment, not to overload, secured items and not to block sight of view.</p> <p>Hand tools - Use suitable & hand tools free of defects, correct handling technique</p> <p>Packing or de-packing of materials – Beware of nipping hazard, sharp edges or objects such as nails, wear protective gears.</p>

Points to remember:

1. Repetitive motion disorders develop when workers continually place physical stress on one or more parts of the body.
2. Heavy lifting puts automotive service technicians at risk for muscle strains, sprains and back injuries
3. Repeated use of tools that generate noise puts at risk for hearing loss
4. Wearing footwear with non-slip soles is a way to prevent slips and falls
5. Always follow safety rules
6. Emergency plans are the guidelines decided by the organization and which should be followed during emergencies
7. In case of an accident immediately report it to the supervisor

NOTES

Use the blank space provided below to make important notes based on your understanding of the topics or anything which is important for you to remember.

Exercise sheet

Answer the following

1. Write short note on health hazards at workplace.

2. Match the following



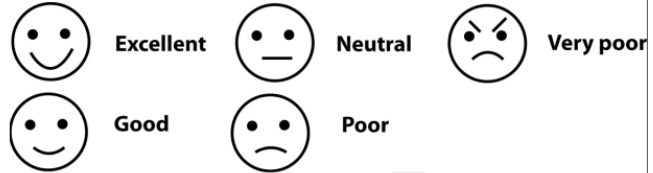
<p>Helmet</p>	
<p>Ear Plug</p>	
<p>Foot protection</p>	

PREVIEW

FEEDBACK SHEET

Course Title: _____
 Date: _____
 Venue: _____
 Trainers Name: _____
 Name (Optional): _____

Dear Participant, we request you to provide us with open feedback to make this training process more effective. We shall really appreciate your time in filling up this form.



PARAMETERS		RATING				
S.No.	TRAINER					
1	How well did the trainer interact with the trainees?					
2	How well did the trainer clarify the doubts?					
3	Was language used by the trainer simple and clear?					
4	Did you find the trainer knowledgeable?					
5	How friendly was the trainer?					
6	How succesful was he in making session lively?					
CONTENT						
7	How good was the learning material?					
8	How well is it related to application at work?					
9	Was it easy and clear to understand?					
FACILITY						
10	Was the place of learning comfortable and safe?					
11	Was the place of learning clean and hygienic?					
12	Did the place of learning has good quality of basic amenities?					
PROGRAMME						
13	How useful did you find the training and do you think it has increaded your skills and knowledge?					
14	How well did it help to improve your attitude towards learning and eagerness to learn more ?					
15	How was the overall effectiveness of the training?					

REMARKS: _____
