







Participant Handbook









Skilling India in Electronics

Address: 155, 2nd Floor, ESC House, Okhla Industrial Area,

Phase 3, New Delhi- 110020, India

Web: info@essc-india.org www.essc-india.org hone: +91 8447738501

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Semiconductor & Components

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Email: info@essc-india.org Website: www.essc-india.org

Phone: +91 11 46035050, +91 8447738501

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Shri Narendra Modi Prime Minister of India







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SKILLING CONTENT: PARTICIPANT HANDBOOK

Complying to National Occupational Standards of

Job Role / Qualification pack: <u>"Welding Operator"</u> QP No. "ELE/Q0102, **NSQF Level 4**"

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The preparation of this manual would not have been possible without the Electronics Industry's support. Industry feedback has been extremely encouraging from inception to conclusion and it is with their input that we have tried to bridge the skill gaps existing today in the industry.

This participant manual is dedicated to the aspiring youth who desire to achieve special skills which will be a lifelong asset for their future endeavours.

About this book

This Participant Handbook is designed for providing skill training and /or upgrading the knowledge level of the Trainees to take up the job of an "Welding Operator" in the Electronics Sector.

This Participant Handbook is designed based on the Qualification Pack (QP) under the National Skill Qualification framework (NSQF) and it comprises of the following National Occupational Standards (NOS)/topics and additional topics.

- Introduction
- Weld the copper lead wire to resistor (ELE/N0102)
- Communicate and coordinate effectively with others (ELE/N9972)
- Work effectively, sustainably and safely (ELE/N1003)
- Employability and Entrepreneurship Skills

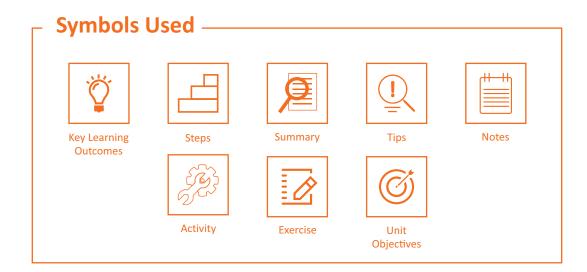


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1. Introduction

Unit 1.1 Underline the Concept of Welding and Skills of a Welder

Unit 1.2 Illustrate the use of Welding in Electronics sector

Unit 1.3 Demonstrate HVAC Welding Techniques

Unit 1.4 Recognize The Job Role Of A Welding Operator



Key Learning Outcomes



At the end of this module, you will be able to:

- 1. Underline the concept of welding and skills of a welder
- 2. Illustrate the use of welding for electronic sector
- 3. Demonstrate HVAC welding techniques
- 4. Recognize the job role of welding operator

Unit 1.1 Underline the Concept of Welding and Skills of a Welder

Unit Objectives



At the end of this unit, you will be able to:

- 1. Discuss The concept of welding
- 2. Assess The skills of a welder

Discuss the Concept of Welding

Welding is the process of joining materials such as metals or thermoplastics together by the process of melting them at specific locations. In this process the base metal is melted and a filler material is added to the joints. This forms a pool of melted materials which eventually, cools down to form a joint stronger than the base metal.

It is the process in which heat or pressure is applied to join the metals. Parts that are joined by welding are called a Weldment. Welding can be broadly classified into two major categories:

- **Fusion Welding:** in this method, the base metal is melted by applying heat. In fusion welding, filler metal that is added to the molten pool adds strength to the joint. Some of the generally used fusion welding processes are arc welding, resistance welding, oxyfuel welding, electron beam welding and laser beam welding.
- **Solid state welding:** in this method, the metals are joined by applying both heat and pressure. There is no use of filler metal. Generally, solid state welding includes diffusion welding, friction welding and ultrasonic welding.

Welding is a reliable, cost-effective and high technology enabled method that is used in the manufacturing industries. In India it is the most extensively used method for joining metals and alloys. Today, advanced technologies such as lasers and plasma arcs use welding. The future of welding is very promising because; researches are going on to discover methods for joining non-metallic or dissimilar materials.

Assess the Skills of a Welder

Welders are have the job of joining metal parts together through various procedures to aid in manufacturing, construction and other areas where metals are involved. To gain success in the highly skilled field of welding, a competent welder must have:

- Awareness of Safety Standards: A capable welder understands safety standards of the industry for protection of themselves, others, and the equipment and tools at hand.
- **Knowledge of Metallurgy:** A knowledgeable welder must be very well- versed with various types of metals, their physical properties, and methods of working with them.
- **Knowledge of Tools and Equipment:** A proficient welder is experienced with a variety of welding tools and equipment. They know how to most effectively use the tools to get the job done quickly in a safe manner.

- Manual Dexterity: A skilful welder has excellent manual dexterity and good hand-eye coordination to perform the complicated physical manoeuvres required of a welding career.
- Good Eyesight: A successful welder has sharp vision and is able to see intricate details of the project at hand
- An Ability to Read Blueprints: An experienced welder is able to read blueprints quickly and easily and understands how the information presented affects a project.
- **Planning skills:** A skilled welder must possess the ability to plan and think in logical steps as well as three-dimensionally. Welders must realise the importance of working logically and in a well-organized manner in order to be successful and safe.
- **Concentration:** A competent welder is able to give their attention fully to a project for long periods of time. They are able to remain committed to their work and ensure all aspects are completed correctly.
- **Detail-Orientation:** A welder should be very detail-oriented when completing a welding task and does not overlook anything that could have large, unwanted effects.
- Thorough Knowledge of Various Welding Techniques: A skilled welder has a thorough knowledge of various techniques, such as oxy-fuel, metal arc, gas tungsten arc and flux core arc welding.

Unit 1.2 Illustrate the use of Welding in Electronics sector

- Unit Objectives



At the end of this unit, you will be able to:

- 1. Evaluate the use of welding in electronics industry
- 2. List the types of metal used in electronics industry and use of laser welding

Use of welding in electronics industry

Use of welding in electronics industry is very limited. One uses welding while joining leads of special transistors. Other Joining methods such as brazing and soldering are also used in the electronics industry.

Various materials and metal parts are joined together in the electronics and electrical industry by using resistance welding like printing circuits, electrical connectors, rotors, etc. These resistance welding components are good conductors of electricity and are difficult to weld. The special feature of resistance welding that is used in electronics industry is the use of exotic materials and small size components that are not easy to weld.

Electronics industry can be divided into three sections. They are consumer electronics, general electronics and electric utilities.

List the types of metals used in electronics industry

There is a wide range of product in the electronics sector. There is also a huge range of options in terms of metals and materials which helps in production. Metals are very important in welding as they conduct electricity along with others. Each metal has specific features and uses. You can utilise these metals best in terms of cost- effectiveness and quality. These are just some of the metals used in this industry:

- Copper
- Lithium
- Tin
- Silver
- Gold
- Nickel
- Steel
- Aluminium and
- Manganese

The use of laser welding

Laser welding is used when welding needs to be done between dissimilar metals. There are several combinations of metal that can be followed in case of dissimilar metal welding.

- Stainless steel and copper can conduct electricity very effectively so they are mostly welded together.
- Another highly used combination is of Aluminium and Copper which are mostly used for electric car batteries.
- Batteries are very important in electronics industry. They are also highly used in dissimilar metal welding. The combinations of stainless steel-copper and aluminium-copper are the two mostly used combinations for batteries. Combination of aluminium and manganese is also used.
- Welding is also used in electronics industry for manufacturing fine wires, fuel cells and even electronic medical devices.

Unit 1.3 Demonstrate HVAC Welding Techniques

- Unit Objectives



At the end of this unit, you will be able to:

1. Evaluate the use of HVAC welding in electronics sector

Use of HVAC welding in electronics sector

HVAC stands for Heating, Ventilation and Air conditioning. In all of these cases welding is very important. Welding is highly used for industrial purposes while application of HVAC is mostly for household purposes. An HVAC technician provides door to door services for refrigerators and air-conditioning machines.

Residential welding operation like HVAC focuses on plumbing issues such as joining pipes that carries natural gas and water. The procedures are much less complicated than industrial welding.

There are several constraints that the HVAC business faces. Repairing work for refrigerator or air conditioning needs to be done within very short time. So there should be enough technicians available to repair such a breakdown.

Secondly, there is increasing environmental factors and strict laws that oppose causing harm to the environment. HVAC equipment like air conditioning, refrigeration and heat pump technologies today must use gases that cause less ozone layer depletion. HVAC equipment today also must have smaller charge sizes, reduced leak rates, increased record keeping, improved working ability of HVAC technician etc.

Unit 1.4 Recognize The Job Role Of A Welding Operator

- Unit Objectives



At the end of this unit, you will be able to:

1. Analyze the job of a welder



State The Job Of A Welder

Welders are responsible for designing, laying out and building metal framework for commercial and industrial buildings. A welder also operates the welding machines that are used to join different metal products. In order to do this, welders use a variety of tools and equipment to cut and join metals.

Welders need a strong knowledge of welding and metal properties. They must have the ability to read and interpret technical documents, blueprint and drawing. They must have experience of handling special welding equipment and procedures as well as electrical and manual tools such as saws, squares and callipers. It is of utmost importance to have knowledge of safety standards and abide by protective equipment and safety gears. Another essential ability is to have an eye for details as well as bear the physical ability to fit and cram into uncomfortable places.

To become a professional welder, a person requires a high school diploma and a certificate from a vocational training institute. A welder uses various types of equipment such as stick welders, MIG welders, TIG welders, angle grinders, saws, squares, callipers and clamps. Welders work in factories, construction sites and other industrial locations.

A welder handles a computer as well to provide instructions on how to start and adjust a welding machine. He also opens a holding device on a welding machine using a hand tool. He reads production schedules and descriptions to understand how a product should be build. He possesses the knowledge of how to handle hand tools and measuring devices to position and adjust fixtures, attachments on working devices. It is also a part of the welder's job to clean and maintain welding machine parts.

Summary



- Welding is the process of joining materials such as metals or thermoplastics together by the process of melting them at specific locations
- Parts that are joined by welding are called a Weldment.
- Welding is a reliable, cost-effective and high technology enabled method that is used in the manufacturing industries.
- Welders are have the job of joining metal parts together through various procedures to aid in manufacturing, construction and other areas where metals are involved.
- Use of welding in electronics industry is very limited.
- There is a wide range of product in the electronics sector.
- Laser welding is used when welding needs to be done between dissimilar metals.
- HVAC stands for Heating, Ventilation and Air conditioning. In all of these cases welding is very important.
- Welders are responsible for designing, laying out and building metal framework for commercial and industrial buildings.
- A welder handles a computer as well to provide instructions on how to start and adjust a welding machine.

Notes 🗐		

Exercise



- 1. The process where you apply heat to weld metals is called?
 - a) Fusion welding
- b) Solid state welding
- c) Weldement
- 2. ______ is used for as a material in the electronics industry
 - a) Cement

b) Current

c) Copper

- 3. H in HVAC stands for?
 - a) Hard

b) Heat

- c) Hydrogen
- 4. Welding is the process of joining materials such as metals or thermoplastics together
 - a) Current

b) Thermoplastics

c) metals

- 5. Parts that are joined by welding are called a Weldment
 - a) Weldment

b) Laser built

c) HVAC



- Your instructor will show you a video on electric machine welding. The link is given below
- Watch the video carefully.
- Try to understand the process and ask any question to your instructor
- Link: https://www.youtube.com/watch?v=F1MM2gjCv7l











2. Weld the copper lead wire to resistor

Unit 2.1 Discuss the Basics Of Electricity and Electronics

Unit 2.2 Underline the basic electronics and component identification

Unit 2.3 Identify welding machine functioning and controls

Unit 2.4 Interpret The Basic Programming, Setting Up and Loading The Work Pieces

Unit 2.5 Identify the different types of welding processes, parameters and associated equipment

Unit 2.6 Underline The Basic Difference Between Welding and Soldering

Unit 2.7 List The Types Of Welding Process and Fillers

Unit 2.8 Underline The Difference Between Good Weld and Bad Weld

Unit 2.9 Record the ohm value and tolerances, Define Basics of Trouble Shouting

Unit 2.10 Identify the colour codes and polarity of components

Unit 2.11 Recognise the raw materials, production processes, quality control, costs, and other techniques

Unit 2.12 List The Different Cleaning Methods for Electrodes, Metal Surfaces, etc.

Unit 2.13 Underline Electro-Static Discharge (ESD), Discuss Common Defects

Unit 2.14 Discuss how to operate compute basic math skills for setting up of welding machine

Unit 2.15 Discuss on how to operate the welding machine and equipment to weld the copper lead wire to resistor $\,$

Unit 2.16 Use of measuring instruments like callipers, micrometres



Key Learning Outcomes



At the end of this module, you will be able to:

- 1. State The Basics Of Electricity
- 2. Discuss The Basics Of Electronics
- 3. Underline the basic electronics and component identification
- 4. Identify welding machine functioning and controls
- 5. Interpret The Basic Programming, Setting Up And Loading The Work Pieces
- 6. Underline The Basic Difference Between Welding And Soldering
- 7. List The Types Of Welding Process
- 8. Identify The Types Of Welding Fillers
- 9. Identify the different types of welding processes, parameters and associated equipment
- 10. Underline The Difference Between Good Weld And Bad Weld.
- 11. Record the ohm value and tolerances
- 12. Explain The Basics Of Trouble Shooting In A Welding Machine
- 13. Identify the colour codes and polarity of components
- 14. Recognise the raw materials, production processes, quality control, costs, and other techniques
- 15. List The Different Cleaning Methods For Electrodes, Metal Surfaces, Etc.
- 16. Underline Electro-Static Discharge (ESD) Precautions And 5S Standards
- 17. Discuss The Commonly Occurring Machine And Component Defects
- 18. Discuss how to operate compute basic math skills for setting up of welding machine
- 19. Discuss on how to operate the welding machine and equipment to weld the copper lead wire to resistor

Unit 2.1 Discuss the Basics Of Electricity and Electronics

- Unit Objectives



At the end of this unit, you will be able to:

- 1. State the basic quantities of electricity
- 2. Tell the types of electricity
- 3. Recognize the basic electronic components



State the basic electrical quantities

Charge: charge is created when an external force, acts between two objects but not directly. The source of this force is called a charge. There are two types of electric charge, opposite types of charge attract each other while similar types of charge repel each other. In terms of physics, any element in the universe has an atom. Atoms are made of tiny particle called proton and electron and they are the carriers of charge.

Conductors: conductors carry electrical current very easily because they have free electrons. Some common conductors are aluminium, copper, gold and silver.

Insulators: these are materials that do not carry electric current very easily. They oppose electric current. Glass, plastic, stone and air are some examples of insulators.

Semi-conductors: they fall in between conductors and insulators. They have the usual properties of a conductor but they can work as conductors under certain circumstances. Silicon is the most well-known semi-conductor material.

Current: it is the flow of charges in a conductor. It is the number of charges passing through a conductor in unit time. Electrons move about freely in a metal, moving electrons basically makes up current.

Volt: free electrons flow around because of the pressure that is put on free electrons, this is known as electromotive force (EMF). Volt is the unit of this pressure. It is basically the amount of EMF force required to push a current of one ampere through a conductor of resistance one ohm.

Ampere: it is the flow rate of electric current. For example when one coulomb or 6 * 1018 electron flows past a given point on a conductor in one second, it is current of one ampere.

Ohm: Resistors resist the flow of current which is needed to melt the metals in a welding current. It is a device that opposes the flow of electric current. Each resistor has a value that tells how strongly it resists the current flow. The unit of this value is called ohm, it is symbolised with a Greek letter Omega Ω .

Tell the electricity and its type

Electricity is the foundation on which the electronics industry works. Electricity can neither be generated nor destroyed. Electricity is obtained by converting it from some other form of energy. Usually power is generated by converting hot steam into movement and this can generate electricity as well.

Electricity is categorised into two types Alternate Current and Direct Current. Batteries, fuel cells etc. produce direct current which is, the flow of electric charge in one direction. Alternate current means the flow of electric charge changes periodically. Rotating motions, similar to the ones created by steam turbines, hydropower, wind etc. can be converted into electric power using a dynamo (DC power) or alternator (AC power)

Various electronic components are used for building electronic circuits. If these components are absent, the circuit designs will be incomplete and will not function well. These components include resistors, diodes, capacitors, integrated circuits, and so on.

Recognize the basic electronic components

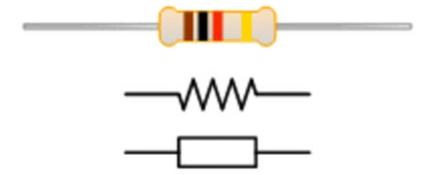
In an electronic circuit there are various types of components. They are classified into two types: active components like transistors, diodes, IC's and passive components like capacitors, resistors, inductors, etc.

In designing of an electronic circuit following are taken into consideration:

- Basic electronic components like capacitors, resistors, diodes, transistors, etc.
- Power sources like signal generators and DC power supplies.
- Measurement and analysis instruments like Cathode Ray Oscilloscope (CRO), multi-meters, etc.

Passive Electronic Components can store energy in the form of current or voltage. Some of these components are:

Resistors: it is a passive electronic component that has two terminals. They are used to oppose or limit the flow of current. They work on the basis of Ohm's Law.



Figur 2.1.1: Resistor (Picture Courtesy: https://www.elprocus.com/wp-content/uploads/2014/10/13.jp)

Capacitors: Two conductive plates make up a capacitor. There is an insulator between them which stores electrical energy. A capacitor blocks the DC signal and allows the AC signal. It also uses a resistor in the timing circuit. Capacitors are of different types like film, ceramic, electrolyte and variable capacitors. Colour coding method is used to find the value of capacitors.

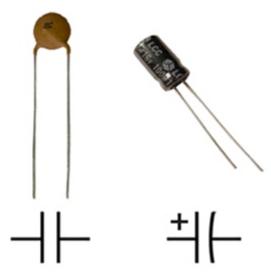


Figure 2.1.2: Capacitors

Inductor: it is also known as AC resistor and it stores electrical energy in the form of magnetic energy. It resists the changes in current. The standard unit of measurement of inductance is Henry. Inductance is the ability to produce magnetic lines.

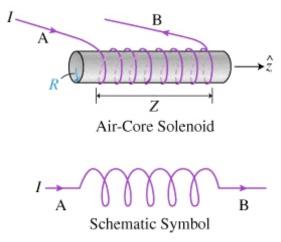


Figure 2.2.3: Inductor

Other passive electronic components include sensors, motors, antennas, memristors etc.

Now, let us learn about some of the active electrical components. Active electronic components control the flow of electrons through a power source. Active components are semiconductors like diodes, transistors, integrated circuits, displays like LED, LCD, CRTs and power sources like batteries, PV Cells etc.

Diodes: a diode allows current to flow in a single direction. They are usually made of semi-conductor material. It has two terminals called anode and cathode terminals. These terminals convert AC circuits to DC Circuits. Types of diodes include PN diodes, Zener diodes, LEDs, photo diodes, etc.

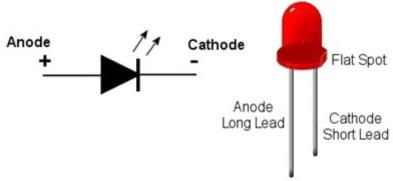


Figure 2.1.4: Diodes

Transistors: it is a semiconductor device and has three terminals. It is used both as a switching device and an amplifier. The switching device can either be voltage or current controlled. There are two types of transistors. They are bipolar junction transistor (BJT) and Field Effect Transistor (FET). Two other types include PNP and NPN transistors.

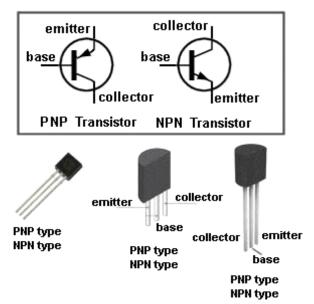


Figure 2.1.5: Transistor

Integrated Circuits (IC): An integrated circuit it a special component which is built with huge number of transistors, resistors, diodes and other components, all placed together on a tiny silicon chip. That is how devices like cell phones, computers etc. are built. Integrated Circuits can be of two types analog and digital. Generally, electronic circuits include ICs like Op-amps, timers, comparators, switch ICs etc.

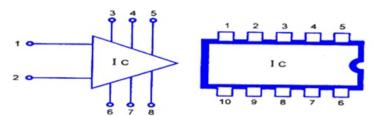


Figure 2.1.6: Integrated Circuits

Now, we will learn about the display devices.

LCD: Liquid Crystal Display is a flat display technology which is mostly used in computer monitors, cell phone display, calculators etc. LCD technology uses two polarized filters and electrodes to selectively disable or enable the light to reflect back to the viewer's eye.



Figure 2.1.7: LCD

CRT: CRT or Cathode Ray Tube display technology is generally used in televisions and computer screen. In this technology there is a movement of an electron beam back and forth on the back of the screen. CRT is a vacuum tube in which there is a flat surface which has external components like electron gun, electron beam and a phosphorescent screen.

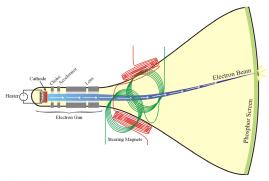


Figure 2.1.8: CRT

Lastly, we will learn about batteries.

Most industrial, domestic and handheld devices use batteries as most common power source. Batteries convert chemical energy into electrical energy. These batteries consist of one or more cells. Each cell contains an anode, cathode and electrolyte. The battery cells are of two types, primary cells and secondary cells. Primary cells can be recharged but secondary cells cannot be recharged.

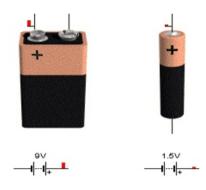


Figure 2.1.9: Batteries

Unit 2.2 Underline the basic electronics and component identification

- Unit Objectives



At the end of this unit, you will be able to:

- 1. Collect the required materials and equipment for welding
- 2. Assess the job sheet for specifications of the lot received



Collect the required materials and equipment for welding

The process of wielding joins metals together by melting two pieces of metal at the seam and hence creating a joint. Kind of wielding materials are as follows

Kind	Characteristics	Images
Covered electrode	 shielding gas is not needed because of the atmosphere interception and the arc is by resolute gas from the coating flux .SMAW(Shield Metal Arc wielding)it is an easy and simple method of wielding and is very possible to weld under the strong wind the structure is made of materials that are painted and covered flux around the core of the steel rod 	A DO

Kind	Characteristics	Images
TIG welding Rod	 GTAW(GAs Tungsten Arc wielding)is a process that is clean it is because of the nonspatter and non-fume gases, it clearly has a bead appearance and the properties of weld metal, for this reason it can be applied to all metals. The shield of the arc from the atmosphere is used to blow inert gas i.e. Argon. GTAW is used as widely as wielding of the pipe to wielding repair Shape of these materials is rod of steel, which includes elements. In addition to this, the materials are coated with copper and others have flux structure cores 	
GMAW solid wire	 These materials are most widely used in Japan, and are used in semi-automatic wielding by the human welder or automatic welding by the robot. Shield of the arc from the atmosphere performs to blow CO2 gas or a gaseous mixture gas of CO2 and Argon it is a steel wire including some elements Shape of these materials is small in diameter and in addition to this there is copper coated type and non-coated type. these wires are packed in bobbin or large drum-pack container 	

Kind	Characteristics	Images
GMAW flux cored wire	 These wires basically generate fewer spatters and their appearance in the bead is better than the solid wires at the fillet or vertical from welding. These are used for ship-building or construction of bridges and in addition to this there are unnecessary kinds of shielding gases too. The wires have double structures for which the inner is made of flux and the outer sheath is cylindrical which a thin sheet plate. In addition to this there is copper coated and non-coated type. These wires packed in either Bobbin or large drum pack container 	
SAW wire	 SAW (Submerged Arc wielding) is used in ultra-high range of current and becomes very high in efficiency by more than two systems of electrodes. It does not generate any arc rays, it has good bead appearance and is also not affected by the strong wind Shape of these wires is a large diameter of steel wire that includes some elements. These are packed in bobbin coil type. These are used in combination with the flux 	

Kind	Characteristics	Images
Strip electrodes	 Strip electrodes are used in the wielding of the overlay on another base of metal surface. High efficiency of work is possible because of wide bead. This kind of wielding method has the submerged arc wielding (SAW) or the electro slag wielding strip electrodes are used in the wielding of the overlay on another base of metal surface. High efficiency of work is possible because of wide bead. This kind of wielding method has the submerged arc wielding(SAW) or the electro slag wielding 	

The main components of the equipment that is required for welding are as follows:

- Power source
- Electrode holder and cables
- Welder protection
- · Fume extraction
- **Power source:** it is a device that provides the electric current to perform the wielding. The wielding requires high current that will be over 80 amperes and it can be over 12,000 amperes in spot welding
- **Electrode holder and cables:** it is a holder which is commonly called a stinger , it is a device for clamping that is used for holding the electrode securely in its position
- **Welder protection:** all the PPE of the welder, which includes working gloves, auto dark welding shield, leather trousers, leather apron, leather spats pair
- Fume extraction: this is used for protection of the employee, reduction of odours, dust and vapours and provide a better working environment

Assess the job sheet for specifications of the lot received

- Welding procedure specification is the formal document that is written which describes the procedures for welding.
- It provides direction to the welder or the operators for making production that is quality and sound production as per the requirements of the code.
- The purpose of the instruction specifications is to guide the welders to the procedures that are accepted so that trusted and repeatable techniques of welding can be used.
- Specific codes or the engineering societies are sometimes the driving force behind the development of the company's WPS. This is further is supported by the Procedure Qualification Record.
- It is a record of a test weld performed and tested that the procedure will produce a good weld

Unit 2.3 Identify welding machine functioning and controls

Unit Objectives



At the end of this unit, you will be able to:

- 1. Assess welding parameters such as temperature, pressure, electrode type, electrode distance or gap, welding current, voltage, process time
- 2. Set up welding work pieces to the welding machine aligning in a way that work pieces do not turn or fall down
- 3. setup work pieces such as grinder, cutter, drills and flux into welding machine
- 4. Construct the machine based on size of cap and load on the machine
- 5. Arrange the materials onto the machine
- 6. Identify and remove completed work pieces from the machine using handling tools
- 7. Employ and monitor the machine constantly to obtain desired weld
- 8. List the gauge, dials, and other indicators of the machine

Assess welding parameters such as temperature, pressure, electrode type, electrode distance or gap, welding current, voltage, process time, etc

Welding temperature-

- Welding is the most economical way and also efficient process of joining two or more pieces of metal together to make them as a single piece.
- MIG (Metal Inert Gas) MIG is the most common way of welding process in which the metals are joined in the process of producing heat with a welding arc that is functioned between the base metal and a continuous consumable electrode.one of the primary functions of the arc is to produce heat.
- The temperature of the electric arc contains the temperature that ranges between 3,000-20,00degree centigrade.
- Welding fumes are composed of complex mixtures of particles and ionized gases. The major source of these fumes is the plasma that is located within the electrodes which is consumable.
- One of the excellent heat source is plasma which has temperatures that is extremely high of 6000degree centigrade, it includes temperatures as high as 24,000 degree centigrade
- In order of producing high quality of welds, TIG welding (Tungsten Inert Gas Welding) is used.
- Tungsten has a very high melting point of approximately 3400 degree centigrade making it harder to melt other than most of the metal; it is not consumable or it would not melt in the arc

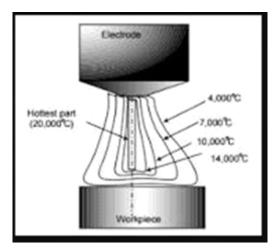


Fig 2.3.1: MIG temperature

Welding pressure-

- MIG shielding gas flow is set and measured in cubic feet of gas per hour (CFH) it is not measured in psi. Unlike the process oxy fuel welding and cutting, the gas flow rate of MIG are very low.
- The pressure of the gas in the hose going into the wire feeder/welder typically ranges between 3-8 psi
- In TIG gas welding the proper gas flow rate must be set at 15-20 cubic per feet (CFH). welders have a wrong information regarding that the higher gas flow/pressure provides greater protection



Fig 2.3.2: welding pressure

Electrode type-

- An electrode is the electrical conductor that is used to make contact with the non-metallic part of the circuit and it is the metal wire which is coated.
- It is important to choose the right kind of electrode for every project
- SMAW or the stick electrodes are consumable which means that they become a part of the welding process
- While the electrodes used in TIG process of welding is non-consumable, as they do not melt and in this process and become a part of the welding process, that requires the need of the welding rod.
- The MIG welding electrode is a continuously fed wire that is referred to as wire



Fig 2.3.3: welding electrodes

Electrode distance or gap-

- The larger gap between the electrodes would mean that the distance between the two electrodes, shows the maximum increasing yield. The maximum gap of the electrodes will decrease the probability of discharge
- The gap of the water is defined by the distance of the electrodes to the rod
- This process shows a relatively low sensitivity to the water gap of 25mm, with the increasing water gap the effect of electrohydraulic is more prominent
- As the length of the arc increases proportional to the increase in the voltage, the extension of the electrode, and distance from the point to the contact tip, the point where the welding wire is melting in the arc, it decreases consistently.
- By using the Ohm's law and holding the constant voltage, the current of the welding must consequently increase

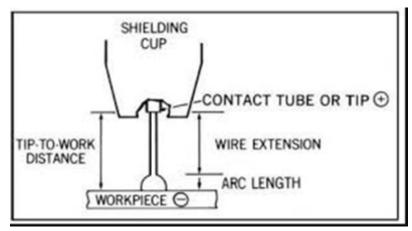


Fig 2.3.4: gap of the electrodes

Welding current-

- It is a process of welding that makes use of the welding power supply that creates an electric arc between the electrode and the base material for melting the metals at the point of welding. Use of Direct (DC) or alternating (AC) current is made
- the electrodes are usually consumable or non-consumable
- the process of welding requires high current supply which must be over 80 amperes and it might need to be above 12,00 amperes for spot welding

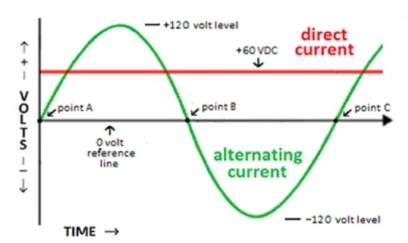


Fig 2.3.5: welding current

Voltage-

• For a MIG welder it has to be an input of 220 volts AC and the output of it varies from 12 volts of DC/40 amp/hr. to 50 volts of DC/130 amp/hr. Commonly used AC/DC "stick welders" usually have an input voltage of 220 volts with its output voltage ranging from 35 volt DC/60 amp/hr. to 85 volt DC/160 amp/hr.

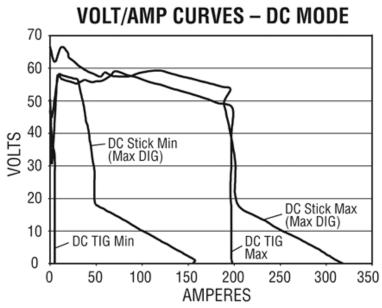


Fig 2.3.6: volt in DC mode

Process time-

- Welding is but, a process of fabricating or process of the sculptural that basically joins the materials that is usually thermoplastic or metals by making a fusion, that is much more distinct from the lower temperature of the metal joining techniques such as brazing and soldering
- It is a hazardous that requires proper precautions and undertaking.
- Weld times are slow as the consumable electrodes must be replaced frequently and because it is slag
 the residue that is left from the flux. The welding processes can be manual, semi-automatic or totally
 automated

Set up welding work pieces to the welding machine aligning in a way that work pieces do not turn or fall down

Process to set up TIG welding machine

Owner's manual must be seen and followed completely for ensuring of safety set-up and the procedures of installations

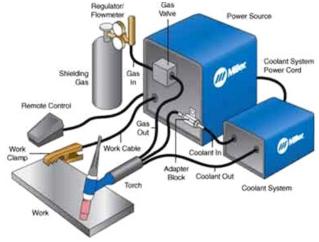


Fig 2.3.7: diagram on TIG set up

Connection of the torch

• When the air cooled torch is being used, adapter must be facilitated along with it from the accessory package and the torch must be plugged in the front of the machine along with gas hose and the regulator that must be connected

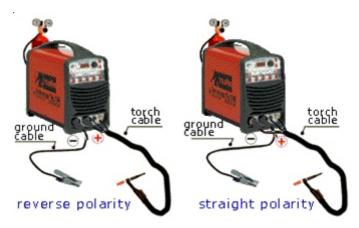


Fig 2.3.8: connecting the torch

Connection of the remote control

• The welder must plug in the foot pedal or the fingertip control into the machine



Fig 2.3.9: connecting the remote control

Connection of the work clamp

• The welder needs to plug in or connect the work clamp into the machine as the next process. Clamp the other end to the work piece or the work table



Fig 2.3.10: connection of the work clamp

Selection of polarity

• For welding aluminium the welder must switch the amperage setting that is on front panel to the AC. for steel and welding of its alloy, switch on the setting of the amperage to DCEN

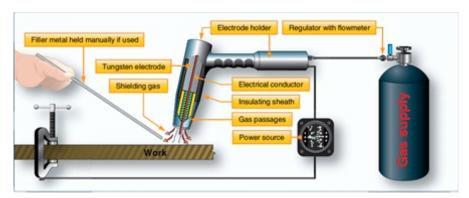


Fig 2.3.11: polarity selection

Preparation of tungsten-

- The welder must grind the tungsten to a point. When welding is carried on aluminium, the tungsten will start to form like a ball. If the ball grows to the same diameter as the tungsten, then the tungsten needs to be repointed.
- Start grinding in the long direction and then make up the point to roughly 2-1/2 times as long as the diameter.
- The welder has to make use of a 200 grit or finer grinding wheel. The wheel must not be used for other jobs or the tungsten can become contaminated for the cause of lower quality of weld

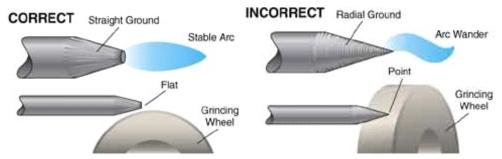


Fig 2.3.12: tungsten prepare correctly

Fig 2.3.13: incorrect way

Assembling of the torch-

- The welder must loosen the back cap and the 3/32" diameter tungsten must be removed from the torch.
- The nozzle and the copper collet pieces have to be removed from the torch. Put the collet and the collet body back into the torch to tighten it.
- Then put the nozzle back into the torch Setup work pieces such as grinder, cutter, drills and flux into welding machine



Fig 2.3.14: assembling the torch

Checking and connecting the power-

- It has to be made sure that the power supply to which the welder is connecting to it matches with the rating of the machine (check out rating label on unit).
- If the machine is supplied with the plug then plug it into the appropriate power outlet when welding will start.
- If the machine is not facilitated with a plug then connect accordingly to the procedure that has been provided in the owner's manual



Fig 2.3.15: connection of power

When a MIG welder is being set up three things must be kept in consideration, those three are:

- Voltage
- · Wire feed speed
- Gas flow rate

To start with the voltage setting: it always starts with D/C electrode +positive. The voltage is the main setting of the heat, that gets changed varying and depending on the joint, thickness of the metal, position of the weld and the gas type



Fig 2.3.16: voltage setting

The speed of the wire feed: the wire speed puts into regulation on the quantity and the speed in which the wire is fed onto the weld joint. The speed is kept in regulation in IPM(Inches per minute)



Fig 2.3.17: checking the setting of the speed of the wire feed

Flow of the gas flow: finally this regulates the transfer type. High amount of percentage of argon and helium added to the mix creates an arc that is hotter. The primary work of the gas setting is to provide for enough amount of gas to shield the area of weld from the air. The flow of the Gas flow rates is measured and regulated in CFM or cubic feet per minute



Fig 2.3.18: gas flow

Name	Characteristics	Images
Angle grinders	 Angle grinders are common welding tools that are commonly found in fabrication of metals and other kinds of metal working shops. These are handheld power tools that make use of consumable stone discs or blades that is attached to them Angle grinders ensure that the task of welding is carried on properly. The maximum revolutions per minute (RPM) can work as it is listed on its blotted paper. The welder must check with the RPM of the angle grinders before it is placed on a disc. If the machine has a higher RPM and the disc is turning too quickly then it might lead to an explosion 	
Plasma cutters	 Welders can make use of a variety of methods to cut the metal that includes a saw, grinder, torch, or plasma cutter it provides an efficient and polished way on making clean cuts, especially When there is a necessity of cutting thick metals. however this plasma cutter must be used in an efficient way and in a safe manner 	3 IN 1 PLASMA CUTTER WELDING MACHINE PLASMA CUTTING TIG WELDING STICK WELDING

Name	Characteristics	Images
Drills	 spot weld drills are usually used for drilling out where the welds are being formed in the spot welding, these make the job much easier and then the place just needs a tidy up with the air brush or the angle grinder 	CO USA
flux	 in the high temperature process of joining of metal (welding, brazing and soldering), flux is a substance which is next to being inert in room temperatures, and it becomes reduced strongly at temperatures When it is elevated. the role of the flux in welding procedure is dissolving of the oxides that is already present in the surface of the metal that facilitates wetting by the molten metal and primarily acting as a barrier of oxygen by the process of coating of the hot surface, by preventing its oxidation 	Schidified slag Shielding gas Tubular electrode Powdered metal. flux anc slag forming naternals weld metal Molen slag Weld pool Are and averal transfer

Arrange the materials onto the machine

- Welding is a process of fabrication in which the thermoplastics and metals are joined together in the process to form an object or structure.
- These materials are joined together by the help of a filler material (like steel) at the boundary points binding them together.
- This fusion is achieved by three techniques gas welding, arc welding, and laser welding
- Gas welding is also called oxy-fuel welding, it is the oldest and a common type of welding and this process works through the burning up of the acetylene in the stream of oxygen.
- The welding of the gas produces a welding flame of 3,100 degrees centigrade to weld high-alloy steels. Very unlike gas welding arc welding it produces a narrow and
- Expensive forms of welding that take place. it makes use of energy beams of high-energy density
- If the electrode is consumable the tip of it melts under its heat of the arc and the molten droplets are detached with each other and transported to the arc through the column of arc.
- Filler metal is melted into the joint that is taken from another wire.

Identify and remove completed work pieces from the machine using handling tools

Apart from the welding machine, grinder, plasma cutter flux and other machines welders do make use of a few hand tools and clamping devices for completing their projects. Here are a few hand tools that a welder uses:

Hand Tools	Characteristics	Images
chipping hammer, and wire brush	 This helps in the process of stick welding, removal of the slag takes place after each of the weld bead have been deposited. The welders in this make use of a chipping hammer that has a measurement of the length of 8-10 inches and is used to remove the slag from the surface of the weld in a gentle manner. Then the person uses the wire brush to clean the chips and also the dust away from the weld. Otherwise, that particular material would be covered when the cover pass is made 	
Hand file	 This tool is used for smoothing the grind edges and for the removal of the burrs from the metal. It is important to have a good fitting between the weld plates; a hand file also gives permission to bring in a bit more precision that the grinder provides. Stainless steel files provide. It must be remembered that stainless steel files have to be used whereas special files are made for aluminium 	
Vice grips	 After the process of welding on a metal object is completed, it must be too hot to handle even wearing gloves. during this time pliers come into effect by helping to pick the object up or repositioning it and to get a firmer grip on the object 	Sie de la constant de

Hand Tools	Characteristics	Images
Pliers	 These hand tools are used to cut the spool wire. the needle nose teeth are mostly used to clean out the carbon build-up and other various debris that is formed inside the nozzle of the MIG gun and even to grip wire 	
Clamps	when the process of welding a joint take place on a free moving object then it must be set up properly even before the thinking of the arc has been stricken	
Aadjustable wrench	 When working with the compressed gases wrench is needed to loosen out the nuts that fasten the regulator between hoses and tanks. the tanks may make use of a chain or other constrain activity so it has to be made sure that it is made secured before the regulators are attached or detached 	

Employ and monitor the machine constantly to obtain desired weld

- Welding is the most common way of joining metal parts permanently for a desired object. Heat is applied for melting, joining and fusing the metals together.
- Welders make use of all type of welding equipment in varied positions and also perform semiautomatic welding
- in semi-automated welding welders make use of machines such as wire feeder for performing the task of welding,
- They plan the work generally from the drawings and specifications or sometimes by analysing the damaged metals and also their knowledge of welding help them
- In many processes work becomes very repetitive, it is in this process that the machine performs the tasks of welding, the operators of the machine set up and operate the machines as it is specified in the layout, blueprints etc.
- Operators must also put constant monitoring on the machine to ensure that it produces the desired amount of weld

List the gauge, dials, and other indicators of the machine

- Measuring and keeping a thorough inspection is an important step of the quality control and checking the reliability of the welded object
- the universal welding gauge helps to measure the angles, edges, and the offsets

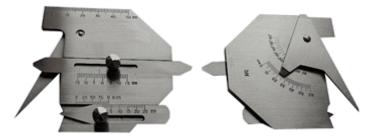


Fig 2.3.19: universal gauge

Unit 2.4 Interpret The Basic Programming, Setting Up and Loading The Work Pieces

- Unit Objectives



At the end of this unit, you will be able to:

1. Demonstrate the program operating instructions into the computers to adjust and start welding machine

Demonstrate the program operating instructions into the computers to adjust and start welding machine

- The processes of welding, soldering operator set up, operate and tend to welding. They typically do the following things:
- Press the buttons and enter the instructions that need to be fed for operating the computers accordingly to adjust the welding machine and start the machine up
- Record the information on operation of the reports of production
- Set up and operate the welding machines that amalgamate the components for the products of metal or their assemblies
- It's either that you can load or feed the work pieces into the welding machine for joining or bonding of the components
- The problems might be corrected by adjusting the controls accordingly or by making the machines stop and opening the holding the devices
- Provide directions to other workers too, in relation to the set-up and use of the machine
- Measure, inspect and test the competed metal work pieces to ensure that it confirms with the specifications, measures that is being used and the devices for testing
- · Operational information on the reports of productions must be recorded

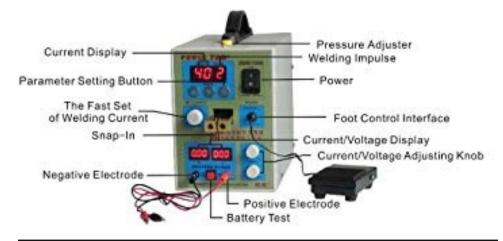


Fig 2.4.1: Micro computer

Unit 2.5 Identify the different types of welding processes, parameters and associated equipment

- Unit Objectives



At the end of this unit, you will be able to:

- 1. Construct and insert the lead wire through the hole provided in the top plate of the upper moving portion above the welding electrode
- 2. Arrange the wire until it comes out of the bottom of the upper moving portion
- 3. Complete , choose and fix the bottom electrode according to cap size
- 4. Arrange welding heads and tooling according to work specifications

Construct and insert the lead wire through the hole provided in the top plate of the upper moving portion above the welding electrode

Different types of welding processes are as follows:

MIG welding	Characteristics	Image
metal inert gas or GMAW(gas metal arc welding)	 This concept is of combining or amalgamating two pieces of metal together along with a wire that is connected to an electrode current this is referred to as MIG welding. In this process a shielded gas is used along the electrode wire, which gets heated up to join the two metals. A constant voltage and a direct power source of current are required. It is suitable for fusion of mild steel, aluminium and stainless steel 	

SMAW	Characteristics	Image
Arc welding or SMAW(shielded metal arc welding)	 It is also called shielded metal arc welding or simply called 'stick'. The most basic type of welding. The stick makes use of electric current to create the formation of an arc between the stick and the metals that is to be joined. This is used in manufacturing, constructing and repair work 	Shielded or Heavy Coating Gaseous Shield Projecting Sheath Slag Projecting Sheath BASE METAL Weld Deposited Molten Weld Metal Weld Metal

TIG	Characteristics	Image
Tungsten Inert Gas or GTAW(Gas Tungsten Arc Welding)	 A non- consumable electrode made out of tungsten is used in this process of welding. The electrode made out of tungsten is used to heat the base metal and also create a puddle of molten weld. By the method of melting two pieces of metal together, an individual weld can be formed. This type of welding requires a very complex procedure that requires a high expertise. This process of welding carries on high quality of work when the requirement is of superior standard finish 	Direction of weld Power Shielding gas Contact tube Tungsten electrode (nonconsumable) Electrical arc Weld bead Shielding gas

FCAW	Characteristics	Image
FCAW(Flux-Cored Arc welding)	 it is an alternative to shield welding, this kind of arc welding was developed and this process of welding is very similar to MIG process, except only that a special tubular wire filled with flux is made into use and the shielding gas is not always needed, depending on the filler. It is an inexpensive method and easy to learn. it is used to construct structural steel for various projects 	Direction of Travel Direction of Travel Self-Generated Gas Shielding Weld Pool Flux Cored Electrode Contact Tip Insulated Torch Body Insulated Guide Tube Arc Slag

Arrange the wire until it comes out of the bottom of the upper moving portion

- Pushing has the effect of producing lower penetration and a wider and a flatter bead because of the arc force that is being directed away from the puddle of weld.
- With the techniques (that is called the pull or trailing technique) the welding gun is directed back to the weld puddle and dragged away from the deposited metal
- The push or pull rule produces slag, while the welding operator drags the rod when welding with a stick or flux-core wire welder. After pushing the wire with the metal inert gas (MIG) welding
- With the wire welding being in process, the operator needs to hold the gun at a degree of 10-15 angle
 in the direction the weld is being pushed. With stick welding, an angle of 20-30 degree must be
 maintained.
- With a fillet, the operator requires to hold the rod or the wire at an angle of 45 degree between the two pieces of metal

Complete, choose and fix the bottom electrode according to cap size

- In the process of stick welding it requires skill of the operators and takes time to master the practice well. Selection of the correct electrode for the job can be also equally challenging. For stick electrodes factors have to be considered when selecting the stick electrode. Things that have to be considered are the welding positions, the base metal type and the joint fit up
- knowing the base of the metal:
- The first step while choosing an electrode is properly determining the base of the metal type that will ensure the strong weld.
- If the operator is working with a broken part of the component then it has to be checked for a coarse and grainy internal surface, that usually would mean that the base material is a cast metal.
- To prevent for the cracking or other welding discontinuities, the minimum strength of the tensile of the electrode to the tensile strength of the base metal. For identification of the stick electrodes the tensile strength by referring to the first two digits of the AWS classification that is printed on the side of the electrode.
- Some electrodes can be used along with AC or DC sources of power while other kinds of electrodes are
 comfortable with both. For determining the correct type of current for a particular kind of electrode,
 the fourth digit of the AWS classification, that represents the coating kind and type of the compatible
 welding current

Fourth Digit	Type of Coating	Welding Current		
0	Cellulose Sodium	DCEP		
1	Cellulose Potassium	AC or DCEP		
2	Titania Sodium	AC or DCEN		
3	Titania Potassium	AC, DCEP or DCEN		
4	Iron Powder Titania	AC, DCEP or DCEN		
8	Iron Powder Low Hydrogen	AC or DCEP		

Fig 2.5.1: the fourth digit of the AWS classification for determining the compatibility of the welding current

Arrange welding heads and tooling according to work specifications

The job descriptions of the welder are as follows:

- The operator requires to read and interpret the blueprints and the process of welding and also the specifications that has been provided
- Welders operate equipment for welding that is semi-automatic in nature to weld iron and non-ferrous metals using the process of GTAW or others
- The operator will operate manual and/or semi-automatic flame cutting equipment
- Operator must be able to operate the brazing and soldering equipment
- He/she must be able to operate the metal shaping machines such as the shear, brakes and other straightening and bending machines
- Repair the parts of the metal objects that are worn out by getting it welded on the extra layers
- The operators must adjust the welding heads and the tooling according to the specification of the work
- It must be ensured by the operators that there is an adequate supply on hand so that he/she can complete the work efficiently
- He/she must perform Pre-operational inspections on the equipment
- There must be a routine maintenance work like lubrication and cleaning of the components of the equipment and the assemblies



Fig 2.5.2: operators who are welding

Unit 2.6 Underline The Basic Difference Between Welding and Soldering

Unit Objectives



At the end of this unit, you will be able to:

1. State the main difference between welding and soldering



State the main difference between welding and soldering

Soldering and welding, both are processes used to join metals or materials together. Both the metals fill gap in metal parts.

In welding, the two metals that are to be joined should be similar. For example, copper cannot be welded to steel. Welding uses high temperature to melt and join two parts. A filler metal is often used in this process. In proper welding, the finishing weld is as strong as the surrounding metal. But too much heat can change the metal's property and weaken the weld. Welding is also used to divide large metal structures by melting through them.

Unlike welding, soldering uses a low temperature. Soldering takes place with the help of fillers. These fillers are also known as solders. They melt below 450 degree Celsius. Some examples of metals that can be soldered are gold, silver, copper, brass and iron. The solder melts and when it becomes solid, it bonds and joins the metal part. This joint may not be as strong as welded joint.

Soldering was done once only by using lead but due to environmental concerns there was need for lead-free options. Flux is also used in soldering and this makes the solder to easily flow over the pieces to be joined. Soldering is also used to join electrical components. These joints may not be strong in structure but connects the parts electrically.

Soft soldering temperature is mainly used for electrical connections and copper plumbing. This process uses a variety of alloy solders. You can use an electric soldering iron or gas torch for soft soldering.

Hard soldering temperature, also sometimes called silver soldering, bonds a larger variety of metals. You should use a gas torch for silver soldering.

Unit 2.7 List The Types Of Welding Process and Fillers

- Unit Objectives



At the end of this unit, you will be able to:

- 1. Discuss the different types of welding processes.
- 2. List of fillers used in welding



Discuss the different types of welding processes.

The most common Welding Processes:

Welding has a host of applications, both industrially and domestically. Welded products could include automobiles, aircrafts, ships, electric and electronic parts, as well as parts in construction and building work. The most common processes are gas welding and arc welding. Below are a few types of welding:

- MIG Welding (Gas Metal Arc Welding or GMAW)
- TIG Welding (Gas Tungsten Arc Welding or GTAW)
- Flux-Cored Arc Welding (FCAW)
- · Gas welding
- Atomic Hydrogen Welding (AHW)
- Resistance welding
- Energy Beam Welding (EBW)

There are various welding processes that are used in the industry. Let us learn about some of them.

Arc welding joins two or more metal parts permanently. It is a combination of different processes in which the material is heated with an electric arc. Pressure is usually not applied in these processes and filler metals may or may not be used depending on the base plate thickness.

Shielded metal arc or Stick welding: in this process the work piece is heated with an electric arc set between a flux-coated electrode and the work piece.



Figure 2.7.1: Stick welding

Submerged arc welding: it is the process in which the mass is produced by heating the work piece with an electric arc placed between the bare electrode and the work piece. A granular material called flux hides the molten pool. The electrode is a wire that is continuously released from a reel.



Figure 2.7.2: Submerged arc welding

Flux core arc welding (FCAW): in this process the flux is inside the welding rod. The electrodes that are used are tubular, coiled and contains flux inside. This saves the cost of changing the welding.



Fig 2.7.3: Flux core arc welding (FCAW)

Gas metal arc welding (GMAW): in this process gasses such as argon, helium, carbon dioxide or a mixture of all these gases are used. These inert gasses are used as shields and they prevent the welding related contamination. The shielding gas is provided by the weld gun while the electrode, used as a wire, provides the filler material.

Gas-Tungsten arc welding (GTAW): this process is also known as tungsten -inert gas welding. In this process the electrode does not provide filler metal. The inert gases that are used, form a shield, and if filler material is required an auxiliary rod is used.

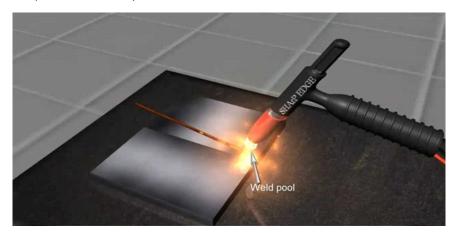


Fig 2.7.4: Gas-Tungsten arc welding

Plasma arc welding (PAW): a non-consumable electrode is used in the plasma arc welding process. Arc plasma is a temporary gas that becomes a conductor of electricity after electric current is passed through it. Plasma arc welding differs from other welding processes in terms of the amount of ionized gas that heats up the welding.



Figure 2.7.5: Plasma arc welding

Oxyfuel gas welding: this process is also known as oxy-acetylene welding. Heat is supplied by flaming acetylene in oxygen. Both the gases are supplied through flexible hoses. The heat produced by the torch is lower and less concentrated than an electric arc.



Figure 2.7.6: Oxyfuel gas welding

Resistance welding: in this process the mass is produced by the heat obtained from resistance to the flow of electric current in a circuit. Heat is also obtained by applying pressure.

Electron Beam Welding (EBW): it is a process in which the heat is obtained from a concentrated beam of a high velocity electron. When these electrons come in contact with the work piece, thermal energy is produced which causes heating and melting of the metal.

Laser beam welding: it is the process in which the heat is generated by a concentrated beam of lights or rays. The energy is obtained from a highly concentrated beam of light that melts the weld metal.



Fig 2.7.7: Laser beam welding

Friction welding: in this process, the mass is produced by the heat generated by the rotation of the rubbing surfaces. When the temperature between these two surfaces becomes high the rotation is stopped and axial force is applied. This pressure fuses the two parts together. The rotation is created through a motor or flywheel.

List of fillers used in welding

Various materials are used to produce a weld. These welding materials are generally called filler materials. They are of two types, filler metals and welding rods.

Filler metals are the metallic wires used to fill the gap between the base metals that are to be joined. Filler metals are a part of the finished weld. In the present context they include electrodes as well, especially non-consumable such as tungsten and carbon electrodes. Other filler metals include fluxes for brazing, submerged arc welding, electroslag welding etc. But filler metals do not include electrodes used for resistance welding or study used for study welding.

The other type of filler material includes the welding rods. A welding rod is basically a piece of wire that is connected to the welding machine. A current is passed through the wire which joins the metals firmly. It is a common name used for electrodes used in the SMAW process. In this process the flux coating present on the electrode provides the shield from air.

Welding rods are broadly classified into two categories, consumable electrodes and non-consumable electrodes. Light coated electrodes as well as shielded arc or heavy coated electrodes are the two kind of consumable electrodes. Light coated electrodes help to control the arc stream and make the arc stable. They also reduce impurities such as oxides and sulphur. The metal melts maintaining proper size and frequency which makes the weld smooth and neat.



Fig 2.7.8: Welding rods

Shielded arc electrodes have a heavy coating. They are more useful when welding cast iron. They produce a thick layer of gas and provide an effective barrier.

Examples of non-consumable electrodes include carbon electrodes and tungsten electrodes. Carbon electrodes are usually made of carbon graphite and are used in arc welding and cutting. They are usually left bare or have a coat of copper layer.

Tungsten electrodes are the type of non-consumable electrode used in TIG welding applicable for lighter welding. They do not have the same strength and durability of alloys and are unsuitable for welding with high current. Tungsten electrodes that contain 1 or 2% thorium are the most common types of non-consumable electrodes. They can be used with higher currents than pure tungsten electrodes and provide better control while welding. You have to use maximum current while using tungsten electrodes.

Unit 2.8 Underline The Difference Between Good Weld and Bad Weld

Unit Objectives



At the end of this unit, you will be able to:

- 1. Define the features of good and bad welding
- 2. Identify bad welds in different techniques

Tell about the features of good and bad welding

Welding can be very basic where two similar metals are joined. It can also be difficult if you are joining dissimilar material. You might also have to work with metals that require special treatment. The below given points can help a welder to identify good weld.

- A good weld must have a good penetration. It means how good the rod is melting into the work material. The melting must be smooth so that they become one piece of metal.
- The weld must penetrate and flow with the surfaces being joined. There should not be any impurities on the surface with regular spacing and thickness.
- A good welding is less tolerant towards impurities, fractures that are created due to pressure on the welded joints or materials, unequal heating.
- In highly complicated welding methods like welding for an oil pipeline or welding for a heat exchanger in a nuclear reactor, there cannot be any mistake. So it is suggested that you perform an ultrasound or x-ray to determine the welding quality.
- A bad weld happens if you apply too little or too less heat. This causes the metal top scorch or form a layer of oxygen or structural failure of the bond.

Identify bad welds in different techniques

Now, you will learn how to identify bad welding that can occur in different welding processes. There are several visual indications with which one can understand if the weld is good or bad.

MIG Welding

Signs of bad welding include:

- · Lack of uniformity
- Very thin welding. The welded metal should be 1/8th of the parent metal
- The middle portion of the bid develops a crack
- · The parent metal gets discoloured

TIG Welding

Signs of bad weld include:

- The underside of the metal is penetrated insufficiently
- Welded metals form too much droplets
- The weld are either undersized or oversized
- Incomplete fusion
- · Porosity or cracking
- Undercut or overlap

Arc Welding

Signs of bad arc welding are:

- Too much spattering of weld
- Undercutting
- Cracking
- Lack of fusion

Oxy Welding

Signs of bad arc welding are:

- The underside is not properly penetrated while welding
- Welded metal forms big droplets
- Undersized or oversized welds
- Undercut or overlapping
- Incomplete fusion
- Porosity and cracking

Unit 2.9 Record the ohm value and tolerances, Define Basics of Trouble Shouting

- Unit Objectives



At the end of this unit, you will be able to:

- 1. Explain ohm's law
- 2. Identify the ohm value and tolerances
- 3. State the basics of trouble shooting in a welding machine

Explain ohm law

Ohm's law states that; the potential difference i.e. the voltage between the ideal conductors that is proportional to the current through it. The constant of the proportionality is called the "resistance", R. Ohm's law can be enumerated by: V=IR where V is the difference between both the points that includes a resistance R

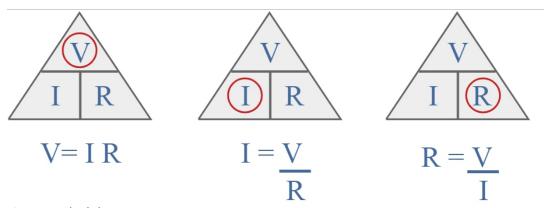


Fig 2.9.1: Ohm's law

Identify the ohm value and tolerances

Tolerance is the percentage of the error in the resistance of the resistors or the what is the quantity of how much or less that can be expected of a resistors actual measured resistance to be from the stated amount of resistance A 220 omega resistor has a tolerance band of silver. Tolerance=value of resistor x value of the tolerance band=220 omegax10%=22 omega

Electronics Colour Code					
Colour Number					
Black	0				
Brown	1				
Red	2				
Orange	3				
Yellow	4				
Green	5				
Blue	6				
Violet	7				
Grey	8				
White 9					

Fig 2.9.2: the colour code

- The Ohm is the unit of standard for the electrical resistance in the International System of Units (SI).
- Ohm's are used when it is multiplied by the imaginary numbers, for denoting the reactance in the alternating current (AC) and the application of the radio frequency (RF). The ohm is also the equivalent of a volt per ampere.
- In a direct-current (DC) circuit a component has the resistance of one ohm when the potential difference of that one volt produces a current of one ampere through the component

name	symbol	conversion	example
milli-ohm	$\boldsymbol{m}\Omega$	$1m\Omega = 10^{-3}\Omega$	$R_0 = 10m\Omega$
ohm	Ω	-	$R_1 = 10\Omega$
kilo-ohm	kΩ	$1k\Omega = 10^3\Omega$	$R_2 = 2k\Omega$
mega-ohm	ΜΩ	$1M\Omega = 10^6\Omega$	$R_3 = 5M\Omega$

Fig 2.9.3: table of resistance values of Ohm

State the basics of trouble shooting in a welding machine

Welding defects or problems occur due to faulty welding techniques or equipment. They may also occur if the operator forgets a step during the welding process.

• **Spatter:** in the gas metal arc welding process (GMAW) sometimes, spatter are created. Spatters are droplets of molten material produced near the molten arc. It happens when welding currents are too high, polarity is wrong or if there is insufficient gas shielding.

Recommendation: reduce the welding current and arc length. Check if the polarity of the consumable is correct. Lastly, check the shielding gas type, flow rate as well as clean the gas nozzle and increase the torch-to-plate angle.

• **Porosity:** it happens due to absorption of nitrogen, oxygen and hydrogen in the molten weld pool. Causes of porosity are moisture, rust, grease or paint on the plate edges, insufficient gas shielding, or when the welding is done onto small gaps that have air in between.

Recommendation: re-bake the weld or use fresh consumable and check the welding torch for licks. Keep the plate edges dry and clean. Check the shielding gas types and flow rate. You should clear the gas nozzle of the welding device and make sure the torch to plate angle is not too large or small.

• **Undercut:** it occurs when arc voltage is too high or when arc is too long. It can also happen due to incorrect use, angle and thickness of electrode. It can also happen if the travel speed is too quick.

Recommendation: check for proper manipulation of the electrodes used. Do not use a bigger electrode than needed. Look after how much weave is used as well. Do not hold electrode bear the vertical plate when making horizontal fillet world.

• **Deformation:** it happens when the welded metal contracts during heating and hardening. When the welding sequence is not suitable for the intended weld, there are many thin beads, poor plate fit-ups, before welding. These also cause deformation.

Recommendation: Weld from both sides of the joint and from the centre out in opposite directions. Use a larger electrode and clamp freely. Change the sequence of welds or the location of the joint or make fewer passes if needed.

• **Cracks:** in any construction, every crack, no matter what the size is considered a defect. Even a small crack and become bigger with time.

Recommendation: spend time grinding, cleaning, filling or de-burring the edges of the plates so that they fit together. Reheat both sides of the joint, it is important to have the correct temperature that will clamp the plates together. Check the settings of your machine to see if you can reach the required amount of heat.

• **Incomplete penetration and fusion:** it is a defect where the weld fails to fuse on one side of the joint in the root. These type of problem occurs more in consumable electrode processes such as MIG, MAG, FCAW. MMA and SAW etc.

Recommendation: use wider root gap and use electrodes whose diameter size is about the same as the gap width of the root. It will be better to use lower travel speed and weave between the plate edges.

• **Slag inclusion:** this happens when, small particles of flux become trapped in the weld metal which prevent penetration of the weld.

Recommendation: use consumable that are well maintained and flux-coated. You can ensure quality welds through correct current, voltage and good arc characteristics.

• **Incorrect wire delivery:** when you start welding, if you hear a chattering sound within the gun cable, it means there is an issue with the wire delivery system.

Recommendation: ensure that the machine and equipment has proper set up and maintenance. Do not use too large welding tips. Ensure that the contact tip of the gun is properly functioning and double check the size of the wire to be used. Check if the tip of the wire is worn out. Always make sure that the drive rolls and guide tube are within close proximity.

Unit 2.10 Identify the colour codes and polarity of components

Unit Objectives



At the end of this unit, you will be able to:

1. Identify the colour codes and polarity of components

Identify the colour codes and polarity of components

The electronic code of colours is used as an indicator of the values and ratings of the electronic components, it is mainly used for resistors but simultaneously it is used for inductors, capacitors, diodes etc. A different code is used for the leads of wire for devices as transformer or in the wiring of the building

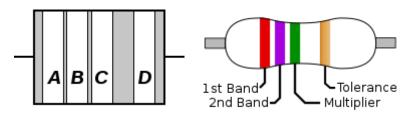


Fig 2.10.1 & 2.10.2: colour band

- in the above image for making a distinction from left to right there is a specific amount of gap the bands of C and D bands
- the first figure of significant component value(left side)
- the second figure (some precision resistors does have a significant figure of third number and will have five bands)
- the multiplier of the decimals (number of the trailing zeroes)
- if it is present, then it gives an indication of the tolerance of value in per cent (no band means 20%)
- resistor with tight tolerance can have three bands other than two, or also an additional band that indicates the co-efficiency in temperature all the coded components definitely have at least two value bands and also a multiplier, other bands are of optional nature

Rin	ng colo	r	Significant	Multiplier			Temperature coefficient		
Name	Code	RAL	figures			Percent [%]	Letter	[ppm/K]	Letter
None	-	-	-	-		±20	M	-	
Pink	PK	3015	-	×10 ^{-3[3]}	×0.001	-		-	
Silver	SR	-	-	×10 ⁻²	×0.01	±10	K	-	
Gold	GD	-	-	×10 ⁻¹	×0.1	±5	J	-	
Black	BK	9005	0	×10 ⁰	×1	-		250	U
Brown	BN	8003	1	×10 ¹	×10	±1	F	100	S
Red	RD	3000	2	×10 ²	×100	±2	G	50	R
Orange	OG	2003	3	×10 ³	×1000	±0.05 ^[3]	W	15	Р
Yellow	YE	1021	4	×10 ⁴	×10 000	±0.02 ^{[3][nb 1][5]}	Р	25	Q
Green	GN	6018	5	×10 ⁵	×100 000	±0.5	D	20	Z ^[nb 2]
Blue	BU	5015	6	×10 ⁶	×1 000 000	±0.25	С	10	Z ^[nb 2]
Violet	VT	4005	7	×10 ⁷	×10 000 000	±0.1	В	5	М
Grey	GY	7000	8	×10 ⁸	×100 000 000	±0.01[3][nb 3][nb 1][5]	L (A)	1	K
White	WH	1013	9	×10 ⁹	×1 000 000 000	-		-	

Fig 2.10.3: colour codes the standard code of colour as per IEC60062:2016

There are different ways as to how, the polarity of the components are marked to show the polarity

Determining the polarity in capacitors:

- The electrolytic capacitors are at times marked with a stripe. This stripe indicates the negative lead.
- If the capacitor is an axial leaded capacitor (the leads come out of the opposite ends) then it might be accompanied by an arrow that points out to the negative lead. Sometimes it can be seen that the positive lead is longer, but if it is a second hand capacitor the lead might have been trimmed and the operator needs to handle it with caution and care

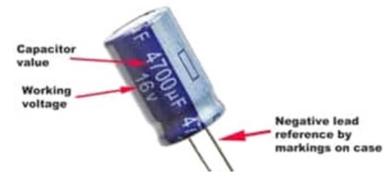


Fig 2.10.4: polarity in capacitor

Determining the polarity in DIODES:

- On the plastic case of the diodes, there is a band of either white or silver colour that is stamped on one end of the diode it indicates the polarity of the diode.
- Diodes of glass might have a band that is black in colour. On either one the positive current flows from the furthest terminal from the band to the closest terminal (and in the opposite direction it is blocked). on a schematic representations the band is represented by 'T', where the outer leads are marked either '+' or'

• The stud diodes, the threaded end is recognised as the cathode and the end that is soldered is the anode

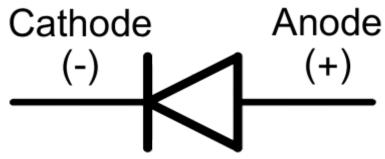
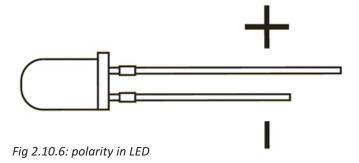


Fig 2.10.5: polarity in diodes

Determining the polarity in LEDS (Light emitting diodes)

- For determining the polarity in the LED it is easy as the longer lead is the anode while the shorter lead in the cathode
- Another option that is available is to find the flat spot on the edge of the LED. The flat spot on the edge indicates the cathode of the lamp



Unit 2.11 Recognise the raw materials, production processes, quality control, costs, and other techniques

Unit Objectives



At the end of this unit, you will be able to:

- 1. Compare the thickness of copper wire, filler material and flux required for welding process
- 2. Assess100% target number to be welded
- 3. Employ conformance to specification of the company
- 4. Record the outcome of weld performed
- 5. Conclude and deliver to the next stage on time

Compare the thickness of copper wire, filler material and flux required for welding process

- Copper is the primary and prime metal that is commonly used in welding leads.
- Copper is the metal that is preferred due its higher amount of tensile strength and higher amount of conductivity as compared to the aluminium conductor wire with similar cross section or diameter.
- Copper as compared to the aluminium wire is more resistant to corrosion
- A proper gas ratio requires to be used depending on the process of welding that is taking place if the welding process is TIG or MIG the thickness of the copper the gas ratio and the temperature will have to be adjusted accordingly.
- It is a rule in general of thumb that the copper under 2mm should make use of argon gas and it can be applied up to 160 A.
- If the copper wire is thick the gas and the ampere of applying helium have to be adjusted accordingly
- A filler material is basically a metal that is added in the process of making of a joint through the process of brazing, soldering or welding.
- Not all the process of welding requires filler materials. welding process that is autogenously in nature only have a requirement of the existing base metal to be melted and this can be sufficient for it
- four kinds of filler materials are used:
- welding fluxes, covered electrodes, bare electrodes, tubular electrode wire
- welding fluxes are used for submerged welding of arc; tubular electrode wires are used for flux-cored welding of arc; bare electrode wires are used in gas metal welding of arc and covered electrodes are used in shielded metal arc welding
- In high temperatures of melting and joining process,
- Flux is a material or substance which is near to being inert at room temperature, but this becomes strongly reduced at the elevated temperatures, hence preventing the oxidation of the base and the filler materials.
- The role of the flux in the process of welding is to dissolve the oxides that is already present on the surface of the metal that facilitates the wetting by the molten metal, and also acts as an oxygen barrier by coating the hot surface by preventing oxidation

Assess100% target number to be welded

- The weld test assurance is the technology that is used to test and assure that 100% of the target is fulfilled of welding; it is also used as a quality assurance for welding
- Welding quality assurance (ISO 3834) is a so called special process, which means that a complete verification cannot have a complete verification of the joint that is welded without destroying it completely. Therefore quality has to be maintained from the beginning
- Several steps are involved in the welding quality assurance so as to make sure that the welding workplace has got workers who are competent.



Fig 2.11.1: quality of weld

Employ conformance to specification of the company

- A welding procedure specification (WPS) is a document that is written formally describing all the procedures of welding, that provides methods and directions that the operators must meet out for keeping up and maintain the quality of the welded product.
- The purpose of this document is basically to guide the operators to the procedures that are accepted so that the trusted and techniques that are repeated can be used by them.
- A WPS is developed for each of the alloy of the material and for the welding type that have been used.
- The WPS is accompanied by a Procedure Qualification Record (PQR) this is basically a documentation or record of the test weld that is performed and tested so as to ensure that the procedure will definitely yield a good weld.
- Every individual welders have a certification with the qualification test that is documented in the welder qualification test record which portrays that the operators have the understanding and quality that have been demonstrated the ability to work within the WPS that is specified



Fig 2.11.2: bend test coupons for the welding procedure qualification

Record the outcome of weld performed

- Welding procedure specifications are documented for the instructions that can be employed to obtain the actual result of the test, there are parameters that are used for the procedure qualification record.
- The PQR is the testing and inspection that is performed during the qualification. This test of welding procedure basically requires documentation to show that all the variables that are used during the procedure of welding and the documented inspection and the results of test
- the Procedure Qualification Record, the testing and the inspection of the testing to be that is performed during the time of qualification have to be taken in consideration
- the typical type of inspection that is required for welding procedure qualification are as follows:
- inspection and testing for fillet welds(tee Joints)- this procedure involves inspection visually of the weld that is complete, which is followed by two macro etches and one fillet weld break test

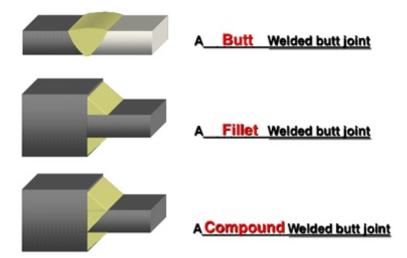


Fig 2.11.3: inspection and testing for fillet welds (tee Joints)

- Inspection and testing for groove welds (butt joints) this procedure involves visual inspection that is followed by two tests of transverse tensile, two face bend test and two root bend test.
- These tests are very typical but can be carried on and might differ depending on the type, thickness and the standard requirements. different and additional testing, which includes side bends, impact testing and all weld tensile tests are carried on

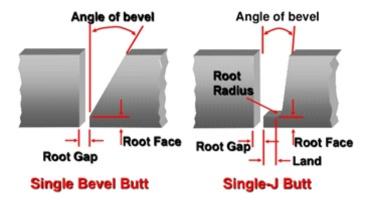


Fig 2.11.4: inspection and testing for groove welds (butt joints)

Conclude and deliver to the next stage on time-Project: **Quality Control Form** Client: Report No.: Contractor: Ref. Standard: **WELDING DAILY REPORT** Page 1 of 1 (PIPING) Doc. No.: Area/location: Ref. Drawing: WPS Pre PWHT Fit up Report No. Result Welder(s) ID Type of Material/Material Spec. Spool Joint Joint O.D Thk. Line No. Root Hot Cap Туре 10 No. Heat **Technical Comments:** Abbreviation: Acc: accept Rej: Reject RC: Re-Cap NA: Not Applicable B: Butt weld S: Socket weld T: Seal Weld (for Threaded Joints), M: Miter For example: Pipe/ 5Lx52 to Flange/A105 Client **Quality Control** TPL Inspection

Fig 2.14.5: welding report/quality control form(sample)

Name:

Sign: Date:

Name:

Project Prime contractor Architect			Project No Contract No	
Project manager				
Required Documentation	Spec .Reference	Requested By	Quantity Needed	Date Required
Prior to pre-Construction Meeting:				
Drawings				
Specifications				
Contract Documentation				
Overall Project Schedule				
Prior to Beginning Work:				
Submittals				
Requests to Sublet				
Building Permits				
Requests for Approval of Materials				
Equipment lists				
Weekly basis:				
Weekly Project Schedule				
Daily/Weekly Inspection Reports				

Name:

Sign: Date:

Fig 2.14.6: project documentation tracker(sample)

The last and final stage of welding would involve, quality check and assurance of good quality of product from the operators

The above images contains the templates for quality check and assurance

Unit 2.12 List The Different Cleaning Methods for Electrodes, Metal Surfaces, etc.

- Unit Objectives



At the end of this unit, you will be able to:

1. State how to maintain the welding electrodes.

State how to maintain the welding electrodes.

The high current that is produced during welding process is formed at the contact area of the welding electrodes. This current must be transferred by force into the work pieces that are to be welded. So, the electrodes must have good electrical contact and thermal conductivity so that they can take in such high force.

So, you must maintain the cleanliness, smoothness and shape of the electrode contact points so that, you can have consistent, good quality welds. The force applied to the electrodes is to be used for welding only, do not use them for re-shaping the piece parts to be joined.

Electrodes can wear out, pick up foreign matter at the contact surfaces, and pit. In these cases you should prepare the electrodes before you start welding. Cleaning or "dressing" of electrodes helps to maintain weld quality and allows you to use them for longer time.

There are a number of ways of "dressing" electrodes:

- a. Insert light force while closing the electrodes in the proper shaped dressing tool.
- b. Use dressing tool that has a proper shaped cutter.
- c. Remove the electrode and treat them in a lathe or a similar machine.

Proper cooling of the electrodes is very important. Improper cooling will soften the electrode material and reduce its working ability. This will increase dressing frequency and maintenance costs. If there is a water leak around the spot welding electrodes, never stop it with paper, teflon, or other insulating materials. Leaks of this nature can be stopped by removing the electrode and applying a small amount of special current-carrying grease to the contact surfaces between the electrode and its holder. Alternatively, you can ream the tapered socket lightly to remove any burrs, nicks, or scratches.

After replacing electrodes, bring them together several times under welding force or tap them with a rawhide, nylon or rubber hammer. This will ensure that the electrode is properly placed to seal the water circuit and provide proper current passage.

Seam welding electrodes should never be dressed by hand in the welder. If dressing is required, the weld wheel(s) should be removed from the welder and the machine should be replaced with spare parts. Dirt, grease, oil, scale, or other oxides decrease electrode life. When possible, these contaminants should be removed before welding.

Unit 2.13 Underline Electro-Static Discharge (ESD), Discuss Common Defects

Unit Objectives



At the end of this unit, you will be able to:

- 1. List the precautions to be taken against electro-static discharge and 5S standard
- 2. Discuss the commonly occurring machine and component defects

List the precautions to be taken against electro-static discharge and 5S standard

What is an ESD (Electro Static Discharge)?

We experience occurrences of static electricity every day. For example, walking along a carpeted floor in a heated room during winter generates sufficient static electricity.

Although this sudden discharge of static electricity does not result in any harm to the human body, it can cause heavy damage to electronic devices as they are sensitive to electrostatic discharge (ESD). It is possible for electronic devices to be damaged by ESD that is imperceptible to the human body.

In order to prevent any component damage from to electrostatic discharge, it is better to adopt precautionary measures. The precautionary aspect to ensure zero damage can be achieved by two means.

Circumstances under which electro-static discharge takes place are as follows:

- During welding process there is flow of current in a conductor. If a person touches a, current may flow through the body to the ground and cause a shock.
- The more there is increased electrical contact with the ground, more is the risk of shock.
- Avoid standing in water, on wet surfaces, or working with wet hands or wearing sweaty garments.
- Small shocks could surprise you and cause you to slip and fall.

Let us see what precautions you can take to avoid ESD.

- Wear clothing made from heavyweight, tightly woven, 100% wool or cotton to protect from UV
- radiation, hot metal, sparks and open flames.
- Keep clothing clean and free of oils, greases and combustible contaminants.
- Wear full-sleeved shirts with buttoned cuffs and a collar to protect the neck.
- Keep your shirt pockets closed and covered to avoid collecting sparks or metals scraps.
- Pant legs must not have cuffs and must cover the tops of the boots.
- Repair all edges, tears or holes in clothing.
- Wear high top boots fully laced to prevent sparks from entering into the boots.
- Use fire-resistant boot protectors to prevent sparks from bouncing in the top of the boots.
- Do not keep lighters or matches in pockets.

- Direct any spark spray away from your clothing.
- Wear leather aprons to protect your chest and lap from sparks when standing or sitting. Protect your wrists and forearms wearing leather gloves and sleeves.
- Wear layers of clothing. But you must make sure that you do not sweat.
- Wear a fire-resistant cap under your helmet to protect your head from burns and UV radiation. Wear a welder's face shield to protect your face from UV radiation and flying particles.

The 5S standard that any organization follows comprises of "Sort", "Set In Order", "Shine", "Standardize" and "Sustain". This helps to maintain smooth working and avoid confusion during work. But along with this another S has been added to the list, that is, 'Safety'. As a welder you must be aware of personal safety as well.

To maintain safety standards as per company policy, the protective gears include:



Fig 2.16.1: Asbestos Gloves



Fig 2.16.2: Flame-proof Aprons Fig 2.16.3: Safety Helmets





Fig 2.16.4: Trousers



Fig 2.16.5: Safety Shoes



Fig 2.16.6: Protective Goggles



Fig 2.16.7: Safety Mask



Fig 2.16.8: Respirator

$\label{lem:commonly} \textbf{Discuss the Commonly occurring machine and component defects}$

Common defects	Remedies		
Improper Surface Conditions	Remedies		
Weld porosity happens because the metal surface is defective.	Deoxidizers such as silicon, manganese, small amounts of aluminum, zirconium		
Accumulation of oil, rust, paint or grease	or titanium can control porosity.		
on the base metal prevents proper weld penetration and causes porosity.	Test the various types of wire available to find the right combination.		
 Processes such as Shielded Metal Arc Welding (SMAW) or Flux-Cored Arc Welding (FCAW) tolerate such surface 	Along with changing the wire, clean the of the metal with a grinder or chemical solvents (such as a degreaser.)		
contamination better than GMAW be- cause the slag helps to clean the metal's surface.	Remember not to use a chlorinated degreaser such as trichlorethylene near the welding arc. The fume may react		
 In GMAW, the only contamination protection is provided by the elements which are alloyed into the wire. 	with the arc and produce toxic gases.		

	Common defects	Remedies			
Gas	Coverage	Remedies			
•	Shielding gases also cause porosity in welds. In the GMAW process the shielding gas protects the molten weld from the air and to act as an arc stabilizer. If there is break in the shielding gas, air can contaminate the molten weld which causes porosity.	 Shielding gas flow varies depending on wire size, amperage, transfer mode and wind speed. Using a flow meter, check that the shielding gas flow is set properly. If shielding gas blows away from the molten weld due to wind flow, erect wind screens. The idea is to change the direction of air away from the molten weld. If fume extraction is necessary, use equipment like extraction guns that will remove the fume, but not disturb the shielding gas. Welding with a drag or backhand technique can lead to gas coverage problems. Try to weld with a push or forehand technique by which the gas will release ahead of the arc and settle with the joint. 			
	Base Metal Properties also causes porosity because of their composition. For instance, the base metal may be extremely high in sulfur content. This will cause porosity.	 Remedy Unfortunately, if the problem with porosity lies within the base metal properties, there is not much that can be done. The best solution is to use a different grade of steel or switch to a slag-generating welding process. 			
Insu	fficient Heat Input	Remedies			
•	Using improper beads such as a convex or "ropy" bead indicates that the welding settings are too cold for the thickness of the material being welded. This means that there is not enough heat in the weld to enable it to penetrate into the base metal.	 To rectify this problem, first determine if the amperage is proper for the thickness of the material. If the amperage is very high check the voltage. If the voltage is too low, there will be a high amount of spatter. On the other hand, if voltage is too high, the operator will have problems controlling the process and the weld will have a tendency to undercut. 			
Technique		Remedy			
•	Improper welding technique can create a concave or convex-shaped bead. For example, a push or forehand technique will create a flatter bead shape than a pull or backhand technique.	For best bead shapes, it is recommended to use a push angle of 5-10 degrees.			

	Common defects	Remedies			
Ina	dequate Work Cable	Remedy			
•	If the work cable is faulty, required voltage will not be available at the arc.	 Work cables can overheat if they are too small or excessively worn. 			
•	You will know if there is a problem with the work cable if the bead shape is faulty or the cable is hot.	 Replace the cable only after consulting a chart to determine size based on length and current being used. The higher the current and longer the distance, the larger the cable needed. 			
Lac	ck of Fusion	Remedies			
•	This happens due to cold lapping in the Short Arc Transfer Process	 Ensure that voltage and amperage are set correctly. 			
•	In short arc transfer, the wire directly touches the weld pool and a short circuit in the system causes the end of the wire to melt and detach a droplet.	 If the operator is still having problems after making those adjustments, it may require a change in the welding technique. 			
•	Fusion problems occur due to lack of energy needed to join the molten metal to the base plate.	 For example, changing to a flux-cored wire or using the spray arc transfer method instead. 			
•	In these cases, the weld will have a good appearance, but none of the metal has actually been joined together.				
•	Faulty Wire Delivery: If the wire is not feeding smoothly or if the operator is experiencing a chattering sound within the gun cable, there may be a problem with the wire delivery system. Wire delivery problem occur due to faulty equipment set up and lack of maintenance.	 Remedy Make sure that the contact tip in the gun is in working order and sized according to the wire being used. Check if the tip is becoming egg-shaped. Then it will need to be replaced. 			
•	Contact Tip: There is a tendency among operators to use oversized tips, which can lead to contact problems, inconsistencies in the arc, porosity and poor bead shape.				
Gu	n Liner	Remedy			
•	A gun liner, like the contact tip, must be sized to the wire being fed through it. It also needs to be cleaned or replaced when wire is not being fed smoothly.	To clean the liner, blow it out with low-pressure compressed air from the contact tip end, or replace the liner.			

Common defects		Remedies			
Worn Out Gun		Remedy			
•	Guns have fine copper wires inside them that will eventually break and wear out with time.	If the gun becomes extremely hot during use in one particular area, that is an indication that there is internal damage and it will need to be replaced.			
		The gun has to be large enough for application. If the gun is too small for the application, it will overheat.			
•	Drive Roll: Drive rolls on the wire feeder	Remedies			
	periodically wear out and need to be replaced.	You can usually understand by seeing if there is wear on the grooves of the rolls if replacement is necessary. Also, make sure that the drive roll tension is set properly.			
		Make sure that the drive rolls and the guide tube are as close together as possible.			
		The path from where the wire leaves the reel and enters the drive roll should be clear.			
		The wire and the incoming guide tubes should be level .			
		Align the wire pool position so that it makes a straight path into the tube.			
•	Wire Coming Off Reel and Tangling	Remedy			
•	Some wire feeding problems occur because the wire reel keeps hanging after it is released from the gun.	Most wire feeding systems have an adjustable brake on the wire reel. The brake tension should be set so that the reel does not hang loose.			

Unit 2.14 Discuss how to operate compute basic math skills for setting up of welding machine

- Unit Objectives



At the end of this unit, you will be able to:

1. Discuss on how to use basic mathematics for welding

Discuss on how to use basic mathematics for welding-

For a welding operator, a neat knowledge and skill of mathematics is important It starts from the basic:

Fractions and decimals

- A myriad of basic application on welding, whether the industry is construction or fabrication requires an elementary understanding of the measurements to actually sixe it, cut and fit metals and other materials.
- Measurements are all based on computing the fractions, which may also require in certain circumstances to be converted into decimals.
- Reading and understanding of the blueprints and the schematic is a common job role of the operator, that requires a general knowledge of the fractions and decimals in requirement to understand how the measurements breakdown and is applicable to the building of the product

1/32	.03125	17/32	.53125
1/16	.0625	9/16	.5625
3/32	.09375	19/32	.59375
1/8	.125	5/8	.625
5/32	.15625	21/32	.65625
3/16	.1875	11/16	.6875
7/32	.21875	23/32	.71875
1/4	.25	3/4	.75
9/32	.28125	25/32	.78125
5/16	.3125	13/16	.8125
11/32	.34375	27/32	.84375
3/8	.375	7/8	.875
13/32	.40625	29/32	.90625
7/16	.4375	15/16	.9375
15/32	.46875	31/32	.96875
1/2	.5	1	1

Fig 2.14.1: Fractions to decimals

Geometry:

- there are several basic tenets of geometry, that will include understanding, calculating and measuring the angles accurately along with measuring and calculating the area and volume of the myriad amount of shapes,
- the radius(distance that is measured from the centre of the circle to one side), the diameter(distance from one side of the circle across the other),
- the circumference have to be measured (distance around the outside of the circle) of shapes those are round or particularly circular objects are important skills of the welder to properly understand the drafting tools like angles (very basic angles of 60 degree and 90 degree).
- Forming joints is the most important feature in welding as joints forms angles, and angles form the primary ingredient of geometry

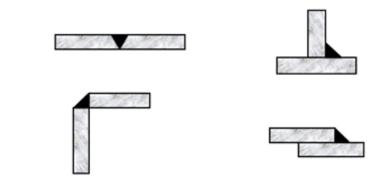


Fig 2.14.2 Welded joint geometry

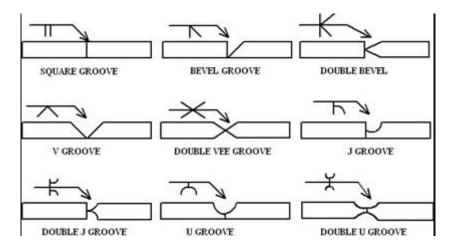


Fig 2.14.3: Quality of welds

Trigonometry:

- most of the welders agree on the fact that a basic understanding of trigonometry is needed for welding, that includes sine, cosine and tangent, these are formulas that works miracle when it comes to solving of problems,
- it is particularly helpful when it comes to solving of problems, and calculating angles and the length of each side of a particular kind of shape that the operator is trying to produce,
- in addition to this calculating the volume and area and also the degrees and understanding the formulas are also vital skills that a welder must possess in trigonometry

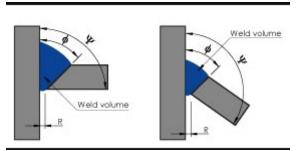


Fig 2.14.4: Trigonometry used in welding

Volume and area:

• Calculation of the volume area and the area are basic components that is related to trigonometry and geometry

Important welding related calculations are:

- It is used in determining the volume of the materials that is able to fit in the given sixe of area
- Estimating the materials that is required for the project
- Calculation of the weld volume- area of the segment that defines the enforcing of the round cap that is placed on a joint weld
- Calculation of pounds of the steel that is required for the project

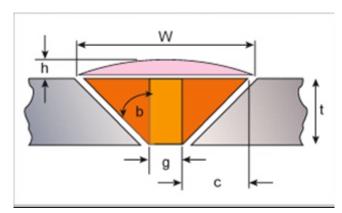


Fig 2.14.5: Calculating the area and volume of the weld

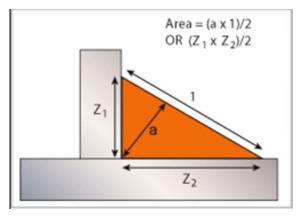


Fig 2.14.6: Calculating the area and volume of the weld

Formulas:

- the welders must have basic understanding of the formulas which is an important part for solving of the geometric equations that is very much necessary for replication of certain shapes,
- in addition to calculation of the volume and reading the formulas which is related to the welding gases, an experienced operator or welder can very easily determine the effect of the changes in temperature relative to the changes in the pressure which is based on the formula

$$H_i = A * V * \frac{0.06}{s}$$

 H_i – heat input required in ampere volts min/mm

 $A-welding\ current\ A\ in\ Amps$

 $V-Arc\ voltage\ in\ volts$

 $s-welding\ speed\ in\ mm/min$

Fig 2.14.7 Heat input for welding; formula

$$s = \sqrt{\frac{p \times a^2}{2.5 \times \sigma_{as}}}$$

s = wall thickness

p = excess pressure on tank bottom

a = length of tank

Fig 2.14.8: Formula for plastic welding

b = height of tank $\sigma as = allowable stress$

Unit 2.15 Discuss on how to operate the welding machine and equipment to weld the copper lead wire to resistor

- Unit Objectives



At the end of this unit, you will be able to:

1. Discuss on how to operate the welding machine and equipment to weld the copper lead wire to resistor

Discuss on how to operate the welding machine and equipment to weld the copper lead wire to resistor

- every wire needs to be attached to be attached to something, whether the task is to join the two wires together or attach the multiple wires together directly to a terminal or assembly, choice must be made by the operator between resistance welding, soldering or ultrasonic welding.
- Where soldering is most commonly used in the electronics industry for attaching wires, welding is the process that is preferred among the automotive and also manufacturer of appliances
- The size of the wires affects the parameters of welding as the amount of energy that will be required.
- Larger the wires are, it requires more of energy than the fine wires. When there is high-conductivity metals, such as copper and aluminium the time for welding becomes quite a critical factor
- resistors are non-polar so either end of it can be soldered
- soldering of one end of the copper wire to the remaining resistor lead
- soldering of one end of a second copper wire to the lead that is long
- the process of resistance welding differ from many of the process of welding such as the MIG,TIG
- Heat is generated through the passage of the electrical current through the circuit of resistance.
- The force that is applied is a result of the coalescence that will occur. pressure is to be required throughout the complete process and it has to be made sure that a continuous electrical circuit must be there throughout



Fig 2.15.1: weld the copper lead wire to resistor

Unit 2.16 Use of measuring instruments like callipers, micrometres

- Unit Objectives



At the end of this unit, you will be able to:

- 1. Recognize a calliper and how to use a calliper
- 2. State the use of a micro-meter and how to measure using a micro-meter

Recognize a calliper and how to use a calliper

A calliper is an instrument to measure the distance between the two opposite sides of an object. They have two points like a compass, an inward or an outward facing point. The tips of the callipers are adjusted to fit along the points that are to be measured. The calliper is then removed and the distance between the tips is measured using a ruler.



Figure 2.16.1: Calliper

State the use of a micro-meter and how to measure using a micro-meter

What is a micrometre?

A micrometre, also known as a micrometre screw gauge, is a measuring instrument. It can take extremely accurate measures. They are usually in the form of callipers. There is a spindle that is screwed tightly and the object to be measured is placed between the spindle and the anvil.



Figure 2.16.2: Micrometre

Micrometres are of different types built according to different objects they measure. These are: Outside Micrometer: This type of micrometre measures the outside diameter of the object.



Figure 2.16.3: Outside of the Micrometer

Inside Micrometer: this is used to measure the inside diameter of an object.



Figure 2.16.4: Inside of the Micrometer

Depth Micrometres: a depth micrometre is for measuring the depth of a hole, recess or slot.



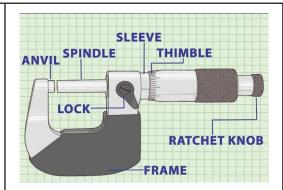
Figure 2.16.5: Depth Micrometres

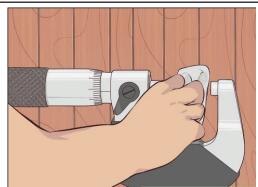
How to measure using a micrometre

Understand the parts of a micrometre. They are:

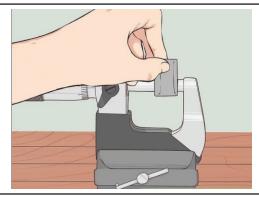
- Ratchet stop
- Thimble
- Frame
- Thimble lock
- Spindle
- Anvil
- Sleeve

Clean the anvil and spindle before beginning. Use either a clean sheet of paper or soft cloth, and hold it between the anvil and the spindle. Gently twist and close on the sheet or cloth. Slowly, pull out the sheet or the cloth

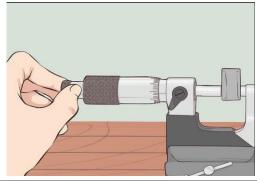




Hold the object in your left hand and place it against the anvil. Make sure the object doesn't move or scratch the surface of the anvil.



Hold the micrometre with your right hand. The frame will rest gently on your palm.



Spin the ratchet counter clockwise. Be sure the 0 on the thimble is lined up with the scale on the sleeve. Twist until the spindle is against the object. Apply enough force. The thimble often clicks. Stop after three clicks. Set the thimble lock while the micrometre is still on the object. Slide out the object carefully. Be sure to avoid scratching either surfaces of the anvil or spindle. Write down the measurement before unlocking the

Summary



- Basics of Electricity include Charge, Conductors, Insulators, Semi-conductors, Current, Volt, Ampere, Ohm.
- Basic electronic components include resistors, diodes, capacitors, integrated circuits, and so on.
- Soldering and welding, both are processes used to join metals or materials together. Both the metals fill gap in metal parts.
- Various materials are used to produce a weld. These welding materials are generally called filler materials
- · Welding defects or problems occur due to faulty welding techniques or equipment
- You must maintain the cleanliness, smoothness and shape of the electrode contact points so that, you can have consistent, good quality welds
- In order to prevent any component damage from to electrostatic discharge, it is better to adopt precautionary measures

lotes			

Exercise



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- a) MIG welding
- b) TIG welding
- c) Gas welding
- d) Arc welding

- 2. _____ blocks DC signal and allows AC signal
 - a) Resistors
- b) Capacitors
- c) Inductors
- d) Diodes

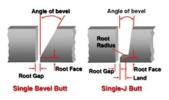
- 3. Electrodes used in SMAW are also called?
 - a) Welding rods
- b) Flux
- c) Conductors
- d) Insulators

- 4. Porosity occurs because of high content of?
 - a) Carbon
- b) Oxygen
- c) Sulphur
- d) lodine
- 5. _____are all based on computing the fractions, which may also require in certain circumstances to be converted into decimals
 - a) Measurements
- b) Figures
- c) Micrometers
- d) Decimals

6. Identify the image



7. Identify the image



- 8. Basic electronic components include resistors, ______, capacitors, integrated circuits, and so on.
 - a) Cathodes
- b) Anodes
- c) Diodes
- d) IC
- 9. Welding procedure specifications are documented for the instructions
 - a) Instructions
- b) Constructions
- c) Moulding
- d) Soldering

Activity



- The instructor will show you a video of soldering. The link is given below.
- Watch the video carefully
- After that, discuss the difference between welding and soldering.
- The instructor will choose one student who will speak at a time.
- Link: https://www.youtube.com/watch?v=f7XQ-U4udlc

- Activity





- The given image is of a Tungsten electrode.
- Each student will point out one use of tungsten electrode in welding





- The above image shows an improper welding surface
- Each student will state one remedial process for this particular problem.











3. Communicate and coordinate effectively with others

Unit 3.1 – Communicate effectively with supervisor and colleagues

Unit 3.2 – Respect Gender and ability difference



Key Learning Outcomes –

At the end of this module, you will be able to:

- 1. Trainee will be able to List and discuss potential hazards at the workplace
- 2. Trainee will came to know about the importance of following organizational guidelines for dress code, time schedules, language usage and other behavioural aspects.
- 3. Trainee will be able to maintain personal safety and hygiene at the workplace
- 4. Trainee will be came to know about the process of reporting grievances and unethical conduct such data breach, sexual harassment at the workplace, etc.
- 5. Trainee will be ale to coordinate with Pwd candidates effectively.

Hazards At Workplace

One of the essential factors to a positive work environment is establishing good working relationships with your co-workers and your supervisor. According to a recent workforce study, 84% of employees rated their relationship with their supervisor as good or excellent. The study also found that these strong relationships are based on trust from both employees and supervisors, and that it takes an open line of communication from both parties to create this type of environment. With that said, successful relationships are built upon the practice of effective communication skills. Effective communication with your supervisor is a key element of your eventual success in the workplace. Therefore, it is important that you feel comfortable and prepared to approach your supervisor in a timely manner to discuss concerns, request assistance, or report work progress.

TIPS FOR EFFECTIVE COMMUNICATION WITH YOUR SUPERVISOR

- 1. Before talking to your supervisor, make sure that you are clear about the goal of your conversation, whether it's to request guidance or assistance on something you are working on, or report your progress on a project. It is helpful to write down all the topics you hope to discuss and communicate before the conversation.
- 2. Choose a preferred method of communication. Some people are more effective communicating via email while some others prefer to have face-to-face time or a quick conversation. Tailor the communication method to the one your supervisor prefers. Schedule your conversation. Be considerate of your supervisor's time and schedule when you approach him/her. Don't try to communicate or pressure for an answer when he or she is under a deadline or resolving an urgent issue. If your supervisor prefers face-to-face meetings, schedule your conversation ahead of time so that you can prepare accordingly. Try not to wait until the last minute to ask for instructions and/or assistance on projects you are working on.
- 3. Be concise and straightforward. When speaking with your supervisor, you should concisely introduce your concerns or requests and explain why you are bringing them to his/her attention. It is also important to focus the communication on the issues at hand and how to find solutions to move forward.
- 4. Practice active listening. During a meeting with your supervisor, you should engage to be an active listener instead of worrying about what you are going to say. Practicing active listening skills will help you understand and anticipate your supervisor's needs and what actions need to be taken. Take notes as needed so that you will remember more of the conversation and action items.
- 5. Have a positive attitude and be open to feedback. The rule of thumb in effective communication and a successful relationship is to exhibit a positive attitude. It is also crucial to keep an open mind and be receptive to feedback that your supervisor may provide you.
- 6. Communicate regularly with your supervisor to develop and maintain a successful professional relationship. Establishing an effective communication channel with your supervisor on a regular basis when things are going smoothly will make it easier to approach him/her when a problem arises.

Potential Hazards At Workplace

- Electrical Accident. ...
- Exposure to Dangerous Chemicals. ...
- Machinery & Tools Hazard. ...
- Workplace Harassment. ...
- Fire Accidents. ...
- Workplace Theft. ...
- Workers Existing Health Conditions.

Importance Of Following Organizational Guidelines

When employees follow procedures, they perform tasks correctly and provide consistent customer service. This enhances the quality of your organization's products and services. And, in turn, improves your company's reputation. Employees can know they are fulfilling their roles and take pride in their work

Importance Of Maintaining Personal Safety & Hygiene At The Workplace

Spending more time at work makes us more responsible to follow proper hygiene as there are more people to spread germs and variety of infections. Employees and employers both can contribute towards maintaining good hygiene and sanitation.

Process Of Reporting Grievances and Unethical Conduct Such Data Breach, Sexual Harassment At The Workplace

Sexual harassment is unwelcome conduct of a sexual nature that is persistent or offensive and interferes with an employee's job performance or creates an intimidating, hostile or offensive work environment. Sexual harassment is defined by the federal Equal Employment Opportunity Commission as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature when, for example:

- (a) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment,
- (b) submission to or rejection of such conduct by an individual is used as the basis for employment decisions affecting such individual, or
- (c) such conduct has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile or offensive working environment.

Sexual harassment can be physical and psychological in nature. An aggregation of incidents can constitute sexual harassment even if one of the incidents considered on its own would not be harassing.

Examples of prohibited conduct -

Though sexual harassment encompasses a wide range of conduct, some examples of specifically prohibited conduct include the following:

- Physical assaults of a sexual nature, such as rape, sexual battery, molestation or attempts to commit
 these assaults, and intentional physical conduct that is sexual in nature, such as touching, pinching,
 patting, grabbing, brushing against another employee's body or poking another employee's body.
- Unwelcome sexual advances, propositions or other sexual comments, such as sexually oriented gestures, noises, remarks, jokes, or comments about a person's sexuality or sexual experience.
- Preferential treatment or promises of preferential treatment to an employee for submitting to sexual conduct, including soliciting or attempting to solicit any employee to engage in sexual activity for compensation or reward.
- Subjecting, or threats of subjecting, an employee to unwelcome sexual attention or conduct or intentionally making performance of the employee's job more difficult because of that employee's sex.
- Sexual or discriminatory displays or publications anywhere in [Company Name]'s workplace by the [Company Name] employees.
- Retaliation for sexual harassment complaints.

Responding to Conduct in Violation of Policy

Employees –

- If an employee feels that he or she is being subjected to sexual harassment he or she may immediately inform the harasser that the conduct is unwelcome and needs to stop. If the inappropriate conduct does not cease, or if the employee is unable to or uncomfortable with addressing the alleged harasser directly, he or she should report the incident to his or her own supervisor or to the human resource (HR) director. It is helpful, but not required, to provide a written record of the date, time and nature of the incident(s) and the names of any witnesses.
- It is important to report all concerns of sexual harassment or inappropriate sexual conduct to the
 HR director or a supervisor/manager as soon as possible. Management must be made aware of the
 situation so that it can conduct an immediate and impartial investigation and take appropriate action
 to remediate or prevent the prohibited conduct from continuing.

Managers and supervisors

- Managers and supervisors must deal expeditiously and fairly when they have any knowledge of sexual harassment within their departments, whether or not there has been a written or formal complaint. They must:
- Take all complaints or concerns of alleged or possible harassment seriously no matter how minor or who is involved.
- · Report all incidents to HR immediately so that a prompt investigation can occur.
- Take any appropriate action to prevent retaliation or prohibited conduct from recurring during and after any investigations or complaints.
- Managers and supervisors who knowingly allow or tolerate sexual harassment or retaliation, including the failure to immediately report such misconduct to HR, are in violation of this policy and subject to discipline.

Human resources

The HR director is responsible for:

- Ensuring that both the individual filing the complaint (complainant) and the accused individual (respondent) are aware of the seriousness of a sexual harassment complaint.
- Explaining [Company Name]'s sexual harassment policy and investigation procedures to all parties involved.
- Exploring informal means of resolving sexual harassment complaints.
- · Notifying the police if criminal activities are alleged.
- Arranging for an investigation of the alleged harassment and the preparation of a written report.
- Submitting a written report summarizing the results of the investigation and making recommendations to designated company officials.
- Notifying the complainant and the respondent of the corrective actions to be taken, if any, and administering those actions.

The HR director will determine if an in-house investigation will be conducted or if a third party will be contracted to complete the investigation. All complaints involving senior management at the vice-president level or above will be handled by an external third party.

Complaint Resolution Procedures

Complaints should be submitted as soon as possible after an incident has occurred, preferably in writing. The HR director may assist the complainant in completing a written statement or, in the event an employee refuses to provide information in writing, the HR director will dictate the verbal complaint.

To ensure the prompt and thorough investigation of a sexual harassment complaint, the complainant should provide as much of the following information as is possible:

- 1. The name, department and position of the person or persons allegedly committing harassment.
- 2. A description of the incident(s), including the date(s), location(s) and the presence of any witnesses.
- 3. The effect of the incident(s) on the complainant's ability to perform his or her job, or on other terms or conditions of his or her employment.
- 4. The names of other individuals who might have been subject to the same or similar harassment.
- 5. What, if any, steps the complainant has taken to try to stop the harassment.
- 6. Any other information the complainant believes to be relevant to the harassment complaint.

Discipline —

Employees who violate this policy are subject to appropriate discipline. If an investigation results in a finding that this policy has been violated, the mandatory minimum discipline is a written reprimand. The discipline for very serious or repeat violations is termination of employment. Persons who violate this policy may also be subject to civil damages or criminal penalties.

Confidentiality ———

All complaints and investigations are treated confidentially to the extent possible and information is disclosed strictly on a need-to-know basis. The identity of the complainant is usually revealed to the parties involved during the investigation and the HR director takes adequate steps to ensure that the complainant is protected from retaliation during and after the investigation. All information pertaining to a sexual harassment complaint or investigation is maintained in secure files within the HR department.

Other Available Procedures —

The procedures available under this policy do not preempt or supersede any legal procedures or remedies otherwise available to a victim of sexual harassment under local, state or federal law.

Discuss Ways To Create Sensitivity For Different Genders And Persons With Disabilities

A disability is an impairment that can be mental, physical, developmental, cognitive, or emotional. A person can become disabled at birth or over the course of a lifetime. Some disabilities are birth defects, others are revealed as a person ages, and some are caused by accidents and/or other events.

Disability Diversity —

Part of the diversity present in today's workforce are disabled workers. However, disabled does not mean someone with a disability is incompetent or unable to do their job. Disabled simply means the disabled person has an impairment. It also doesn't mean that the person lives off entitlement programs or gets any "breaks" that a person who is not disabled can't receive.

There are all types of disabilities covered by the word "disability." It does not mean, as we said, that the person with a disability is unable to work or complete their job as well as anyone else. Just as with race, gender, culture, a disability may mean that someone does things a little differently than you. A person with a hearing disability might need special accommodations related to communication. A person with a physical disability may require a different type of entrance into the place of work, or a desk in a location that accommodates a wheelchair.

As with any other person or group of people we've discussed thus far in this course, people with disabilities should be treated the same as everyone else. They should be treated equally. Understanding your own feelings, beliefs, and values related to disabilities, then understanding theirs, will go a long way toward promoting a harmonious, productive workplace environment.

Common Stereotypes –

Stereotypes are common to the disabled. The reason for this is we make assumptions based on the disability instead of the capability of the disabled person. For example, it's a stereotype that people with cerebral palsy have a lowered intelligence level, when the truth is they don't. It's also a stereotype that they are unable to walk and cannot talk. These are both false as well. However, they are stereotypes that people believe, based on misconceptions, past experiences, and the absence of fact.

The same holds true of those with mental illnesses. The common stereotypes are that they're dangerous, unstable, and face periods of hospitalization. These stereotypes are completely wrong and based on the picture some movies in Hollywood give to us of those with mental illness. But think of it this way: Clinical depression is a form of a mental illness. Anxiety issues can be considered a form of mental illness. Stereotyping someone because they suffer from a disability is taking the individual out of the equation and labeling someone as less than you, or others like you, who don't have a disability.

Whenever you see a person with disability, you should presume they are just as competent as you are in the job they've been assigned. Never assume they aren't capable, or that you need to step in and help. Pity is not the same as compassion. Pity stems from stereotypes and biases. Compassion stems from an awareness of the differences in others and a willingness to work as a team to accomplish goals and meet deadlines.

Using the Correct Terminology —

Words can be as powerful as any weapon. Just one word that you use can degrade someone, hurt their feelings, insult them, or even imply that you are discriminating against them. It used to be acceptable to refer to a person with a disability by naming their disability. If a woman was blind, you could say, "the blind woman."

However, labeling someone by a disability takes away from their abilities and individuality. Just as you don't want to be labeled by features you're not proud of (perhaps you have a big nose or ears), people with disabilities don't want their disability to be their name tag, so to speak.

In the early 20th century, the word "handicapped" was popular to describe people with disabilities. It didn't matter what type of disability they had. People with disabilities do not like this term applied to them, though. It suggests they have something that holds them back from doing things people without disabilities can do. It suggests they are somehow less than.

It's always best to use first person when referring to, or talking to, anyone. Address the person. Refer to the person. Do not refer to the disability, just the same as you shouldn't refer to the race, economic circumstance, or religion. Whenever possible, refer to a disabled person by their name. If you don't know their name, use a distinguishing feature, such as the color of their shirt, their location (the woman next to the copier), etc.

Disability Etiquette ——

Your disabled co-workers and employees are not any different than you, in that they are there to earn a living, advance their career, and better the organization through their contributions. You don't have to "baby" someone with a disability, and you don't have to watch what you say out of fear of offending them.

Here is an example: _____

A colleague has a form of mental illness. One day, you remark to another co-worker that your son is "driving you crazy." Suddenly, you realize the person with a mental illness has heard you, and you quickly apologize.

Relax! There's no need to worry. If you're worried that you offended someone, ask. Sometimes you won't have to ask. The person will politely tell you they find your words offensive. However, you don't have to tip-toe around people with disabilities. They can use the same slang and jargon that everyone else does.

You'll find that you'll be more relaxed if you just see the person – the individual – instead of seeing them as their disability. Maybe they have a great sense of humor. Perhaps they're a sharp dresser. Maybe they're a hard worker. See them for the things they are. They are not defined by their impairment any more than you are defined by the color of your hair. If you are afraid of them, or uncomfortable around them, because of their disability, then do some research to learn more.

Listed below are some other tips for interacting with people with disabilities.

- Treat people with disabilities as you would anyone else. Offer your hand as you would any other coworker.
- If someone is deaf, maintain eye contact with them, not an interpreter, when you are communicating. They are the person you are talking to, not the interpreter.
- If you think someone needs assistance, you can offer it. The person may accept it or not. Either way is okay. Don't give your assistance without their permission. That is assuming they can't do something on their own. Let them make that call.
- Sometimes people may have impairments that affect the way they speak. If you're having problems understanding what someone says, ask them to repeat what they said. Be honest. Be polite.
- If someone is in a wheelchair, you want to make sure you converse with them at eye level. This may mean pulling up a chair. Don't bend over, kneel, or lean to talk to them. Also, don't lean on the wheelchair as support. If you can't sit down, it's okay to stand. Just look them in the eye.
- If someone has a visual disability, identify yourself and anyone else who is with you. If talking to someone else other than the blind person in a group, make it clear who you are speaking to by addressing them by name.
- Never pat people in wheelchairs on the head or on the shoulders. That is how you would treat kids
 or pets. Always treat adults as adults.
- To get the attention of a person who has a hearing disability, tap them on the shoulder. Speak slowly and clearly so the person can read your lips. Don't block the view of your mouth. Speak in normal tones. Don't shout.

In today's workplace, you need to be able to effectively communicate with anyone, regardless of their generation. To do that, you must also recognize and respect the differences in the three generations and how they view work, communication, and life -- then be flexible to find an effective middle ground. Most of all, you must be willing to listen and learn.

Intergenerational Communication in the Workplace

Communication is a critical part of being successful in business. But since American organizations have not fully recognized the importance of generational diversity in the workplace and how it affects business, miscommunication exists, instead. This creates discord and becomes harmful to the organization's bottom line.

In short, the three generations in the workplace today are misunderstanding each other. The misunderstandings cause loss of productivity, employee disenchantment.









4. Work effectively, sustainably and safely

Unit 4.1 - Achieve optimum productivity and quality

Unit 4.2 – Implement health and safety procedures

Unit 4.3 - Organise waste management and recycling

Unit 4.4- Conserve resources



Key Learning Outcomes –

- 1. Learner will be able to maintain good housekeeping in their surroundings.
- 2. Learner will be able to maintain work quality standards
- 3. Learner will be able to know about state organizational safety procedure
- 4. Learner will be able to bifurcate waste product & useful product & disposal of waste product
- 5. Learner will be able to know about different types of waste & their disposal procedure
- 6. Learner will be able to know about importance of efficient utilisation of water, electricity and other resources

Importance of Good Housekeeping At Workplace

Effective housekeeping can help control or eliminate workplace hazards. Poor housekeeping practices frequently contribute to incidents. If the sight of paper, debris, clutter and spills is accepted as normal, then other more serious hazards may be taken for granted. Housekeeping is not just cleanliness.

Housekeeping and cleanliness not only make the organization a safer place to work in but also provide a big boost to the image of the organization. These activities also

- (i) improve efficiency and productivity,
- (ii) helps in maintaining good control over the processes, and (iii) assist in maintaining the quality of the product.



IMPORTANT ASPECTS OF HOUSEKEEPING CLEANLINESS

Elements of housekeeping and cleanliness at workplace

The major elements which are normally included in the housekeeping and cleanliness practices at the workplace are described below.

- Dust and dirt removal Working in a dusty and dirty area is unhygienic as well unhealthy for the employees since there can be respiratory type irritations. Also, if dust and dirt are allowed to accumulate on surfaces, there is a potential for a slip hazard. Hence, regular sweeping the workplace for the removal of dust and dirt is an essential housekeeping and cleanliness practice. Further, compressed air is not to be used for removing dust or dirt off employees or equipment. Compressed air can cause dirt and dust particles to be embedded under the skin or in the eye.
- Employee facilities Adequate employees' facilities such as drinking water, wash rooms, toilet blocks, and rest rooms etc. are to be provided for the employees at the workplace so that employees can use them when there is a need. Cleanliness at the place of these facilities is an important aspect of the facilities.
- Flooring Floors are to be cleaned regularly and immediately if liquids or other materials are spilled. Poor floor conditions are a leading cause of accidents in the workplace. Areas such as entranceways which cannot be cleaned continuously are to have mats or some type of anti-slip flooring. It is also important to replace worn, ripped or damaged flooring that poses a trip hazard.
- Lighting Adequate lighting reduces the potential for accidents. It is to be ensured that inoperative light fixtures are repaired and dirty light fixtures are cleaned regularly so that the light intensity levels are maintained at the workplace.
- Aisles and stairways Aisles and stairways are to be kept clear and not to be used for storage.
 Warning signs and mirrors can improve sight lines in blind corners and help prevent accidents.
 It is also important to maintain adequate lighting in stairways. Further stairways need to have railings preferably round railings for adequate grip.
- Spill control The best method to control spills is to prevent them from happening. Regular
 cleaning and maintenance on machines and equipment is an essential practice. Also, the use
 of drip pans where spills might occur is a good preventative measure. When spills do occur,
 it is important to clean them up immediately. When cleaning a spill, it is required to use the
 proper cleaning agents or absorbent materials. It is also to be ensured that the waste products
 are disposed of properly.

- Waste disposal The regular collection of the waste materials contribute to good housekeeping and cleanliness practices. It also makes it possible to separate materials that can be recycled from those going to waste disposal facilities. Allowing material to build up on the floor wastes time and energy since additional time is required for cleaning it up. Placing containers for wastes near the place where the waste is produced encourages orderly waste disposal and makes collection easier. All recyclable wastes after their collection are to be transferred to their designated places so that the waste materials can be dispatched to the point of use or sold.
- Tools and equipment Tools and equipment are required to be inspected prior to their use. Damaged or worn tools are to be taken out of service immediately. Tools are to be cleaned and returned to their storage place after use.
- Maintenance One of the most important elements of good housekeeping and cleanliness practices is the maintenance of the equipment and the buildings housing them. This means keeping buildings, equipment and machinery in safe and efficient working condition. When a workplace looks neglected then there are broken windows, defective plumbing, broken floor surfaces and dirty walls etc. These conditions can cause accidents and affect work practices. It is important to have a replacement program for replacing or fixing broken and damaged items as quickly as possible.
- Storage Proper storage of materials is essential in a good housekeeping and cleanliness practice. All storage areas need to be clearly marked. Flammable, combustible, toxic and other hazardous materials are to be stored in approved containers in designated areas which are appropriate for the different hazards that they pose. The stored materials are not to obstruct aisles, stairs, exits, fire equipment, emergency eyewash fountains, emergency showers, or first aid stations. Also it is important that all containers be labelled properly. If materials are being stored correctly, then the incidents of strain injuries, chemical exposures and fires get reduced drastically.

Ways to Achieve Quality Standards

- Clutter control Cluttered workplaces typically happen because of poor housekeeping practices. This type of workplace can lead to a number of issues which include ergonomic as well as injuries. It is important to develop practices where items like tools, chemicals, cords, and containers are returned to their appropriate storage location when not in use. Clutter is not only unattractive but, in a work area, it is also a serious threat to safety. Danger to the employees increases if the established exit routes and doors are blocked. For this reason, as well as to prevent slips and trips, assorted waste materials need to be disposed of promptly in the appropriate waste containers. Aisles are to be kept clear of obstructions for obvious reasons.
- Individual workspace Individual workspace need to be kept neat, cleared of everything not needed for
 work. Many workplace injuries occur right in the employee's workspace. This space is often overlooked
 when conducting general housekeeping and cleanliness inspections. It is necessary to make a checklist
 which is to be used by the employees to evaluate their workspace.

What is quality work? _____

Quality work is the service/task one completes successfully within the estimated time, with the end output satisfying the expectations of everyone involved, including oneself.

Following are some of the ways to produce quality work.



1. Hold yourself to the highest standard

Quality work starts from commitment and determination to do the job to the best of your abilities. When you hold yourself to the highest standard, you will get the motivation to compete with yourself and raise the bar. This constant quest for perfection can help you produce quality work consistently. Further, when you make yourself accountable for the quality of your work, you will gain the ability to work unsupervised without the necessity to be guided by someone constantly, which is an essential quality in the post-pandemic world.

2. Walk the extra mile

You can ensure the quality of the work you do as an individual. But when your work contributes only a part to a bigger task or goal that your team/organization has undertaken, you have to take up additional responsibilities, help your colleagues to do their part better and inspire the team to produce quality work together. When you take up additional tasks and do more work than what is assigned to you, you can improve the overall quality of your team's output.

3. Recognize mistakes and take corrective action

Quality of work is ensured when you constantly put your work under rigorous scrutiny. Analyzing your own work, identifying mistakes and correcting them at the early stage are important to producing quality work. In contrast, if mistakes remain undetected or swept under the carpet, then they will come back to you and massively impact your productivity.

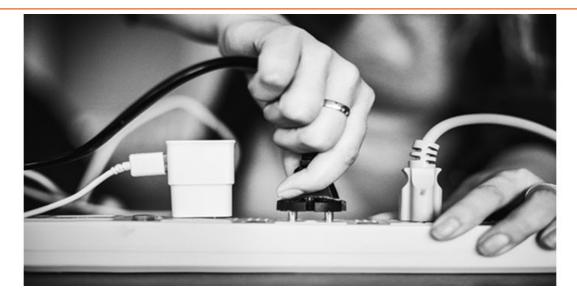
4 Work with your team

Team work ensures quality. You cannot meet the organizational goals and targets single-handedly; for that, you need your team. Moreover, at times, you may need some expertise outside your skillset to complete a task; you may need a helping hand to complete a complicated task; or you may even be packed with too much workload that you may need to delegate some of your own work to someone else in order to meet the deadline. So, it is extremely important to develop cohesiveness with your team and motivate them to constantly meet your quality standards. This will help you do quality work and increase productivity.

5. Stay focused and follow your schedule

You can produce quality work when you stay focused on your work, avoiding distractions and digressions. If you lose focus, then there are more chances of making mistakes. So, you have to focus on the work in hand and stick to your plan and schedule. When you delay your work and do not stick to your plan of the day, you may miss your deadlines. This will reduce the amount of time you have to do your work. When you do not have enough time, the quality of work takes a hit. So, it is crucial to plan the day, make a schedule, stay focused and meet all the deadlines, if you strive to do quality work.

State the organizational safety procedures for maintaining electrical safety (ESD), handling tools and hazardous materials.



Every workplace today operates on electricity, so workplace electrical injuries are a real threat in any location. All electrical systems used in offices have the potential to cause serious harm, especially if improperly used or maintained.

Humans are good conductors of electricity. This means if the open electric circuit comes in contact with our body, we'll get a shock. The electric current will pass through our body from one point to another causing great pain, burns, damage to the tissues, nerves and muscles. This could even lead to death.

Types of Workplace Electrical Injuries -

There are different ways workers can be hurt by electric equipment, which is why electrical safety must be a top focus in every workplace. The four types of injuries that can occur due to electricity are:

- Electric shock
- Burns
- Falls
- Electrocution

Each type of injury can be guarded against with proper planning in the work environment.

How Injuries Can Happen –

Often, injuries related to electricity can be prevented. They happen due to improper maintenance or when someone is not following protocol. Teaching staff the different ways these injuries can impact a person can help impart the seriousness of electrical safety in the workplace. There are various ways people can get hurt:

- Direct contact with exposed electrical circuits or energized conductors.
- Electricity arcs (due to exposed energized conductors or circuit) circulating in the air can pass through a person who is grounded.
- If the skin gets in touch with the heat generated from electric arcs, it burns the internal tissues.
- The light emitted from an electric arc flash (UV and IR) can cause damage to the eyes.
- When the potential pressure is released from an arc flash, there is an arc blast, which can collapse your lungs, cause physical injuries, or create noise that can damage hearing.

Proper employee training plays a crucial role in avoiding electrical injuries at work. Make sure rules for electrical safety in the workplace are presented to every new employee during the onboarding process. Revisit the guidance regularly, and make sure managers consistently enforce the rules. Fortunately, most of the electrical hazards can be easily prevented and controlled with a little caution and regular checks, keeping the office safer for everyone.

Common Electrical Hazards ——

- To see if an environment could become the site of an electricity-related injury, evaluate the status of electrical equipment in the area. Consider the maintenance status of the building's electrical system and the habits of workers. Most injuries are a result of the following:
- Poorly installed, faulty and/or ill-maintained electrical equipment.
- Faulty wiring.
- Overloaded or overheated outlets.
- Use of flexible leads and extension cables.
- Incorrect use of replacement fuses.
- Use of electrical equipment with wet hands or near the source of water.

Tips to Prevent Workplace Electrical Incidents

Create a full list of electrical safety tips and rules for everyone in your office. This guidance should cover a wide range of potential hazards and risks. Start with these rules, and add specific ones that apply to your workplace:

- Unplug or switch off electrical appliances when not in use or while cleaning, repairing or servicing.
- Ensure that all electrical appliances are turned off at the end of the day.
- Don't forcefully plug into an outlet if it doesn't fit.
- Refrain from running electrical cords across doorways, under the carpets, or in areas that witness regular activities.
- Maintain a clearance of at least 3 feet from all electrical panels.
- Use only equipment that is double-insulated and properly grounded.
- Don't overload the outlets.
- Limit the use of personal appliances such as heaters and fans at desks.
- Ensure that two extension cords are not plugged together.
- Only use electrical equipment that is approved by a national testing laboratory. Buy electrical equipment from trusted electrical liquidators who sell good quality electrical surplus materials.
- Pay attention to the warning signs. Equipment may heat up, spark, smoke or make weird noise; Identify the signs and immediately take it out of service.
- Regularly check for defects in cords and equipment. Report immediately if any.
- Place a cover or guard to exposed electrical components or wires.
- While unplugging, grip the plug and pull. Don't pull the cord from a distance.
- Do not use electrical equipment or appliances with wet hands or near water and wet surfaces.
- Clearly identify potential electrical hazards, such as electrical panels, with appropriate safety signs.

Proper employee training plays a crucial role in avoiding electrical injuries at work. Make sure rules for electrical safety in the workplace are presented to every new employee during the onboarding process. Revisit the guidance regularly, and make sure managers consistently enforce the rules. Fortunately, most of the electrical hazards can be easily prevented and controlled with a little caution and regular checks, keeping the office safer for everyone.

Identify Workplace Electrical Hazards

Proper employee training plays a crucial role in avoiding electrical injuries at work. Electrical safety signs and labels provide key information for employees and visitors to help keep everyone safe and prevent workplace electrical injuries.

Add signage in a variety of places in the office to reinforce the concept of electrical safety. Signs should be posted in work areas where electrical equipment is used, as well as social spaces where people gather. The reminders will help people understand the office takes safety seriously at all times.



Different Types of Waste And Their Disposal Procedure

What is waste Management?—

Waste control or waste disposal is all the behaviours and acts necessary to handle the waste from its inception to its final disposal. This involves, but is not limited to, storage, transport, management and recycling of waste along with control and enforcement. It also covers the legislative and regulatory system for waste control, including recycling guidelines, etc."

Types Of Waste management

- Recycling
- Incineration
- Landfill
- · Biological Reprocessing
- Animal Feed

1. Recycling:

Recycling makes a huge difference in protecting the environment. Amongst the various types of waste management, recycling means that garbage is not disposed of in landfills or water sources by making usable litter components. Many entities/communities have made it easier to recycle goods by introducing labelling to show whether or not a material is recyclable.

The great thing about this waste management system is that it has economic and environmental advantages. It saves the government resources needed for waste projects, provides thousands of jobs, and will make a decent deal of money. Only bring recyclable waste to the closest recycling centre to get money from recycling.

2. Incineration:

This type of waste management includes the disposal of waste materials by means of burning. The thermal treatment is another name for this disposal method. You may incinerate on a commercial or human scale and dispose of a broad variety of waste materials. Most countries with limited land consider the incineration process. You may use the power produced by burning waste materials to produce heat, energy or steam. One of the drawbacks of this disposal process is that it can be a source of air pollution

3. Landfill:

It is one of the most popular types of waste management systems in the world. It includes the collection, transportation, disposal and burying of waste in designated property. Many towns are planning deserted and barren areas to cope with waste.

Authorities are committed to ensuring that the construction of each landfill is successful in terms of sanitation and economic land use. However, landfill sites are a significant cause of health and environmental problems that concern many communities. For instance, gas from these landfills is often incredibly dangerous.

4. Biological Reprocessing:

Chemical waste materials, such as kitchen waste and paper goods, can be reused after a procedure called biological reprocessing which is another popular system amongst the varied types of waste management. Multiple physiological systems, including recycling and biomass gasification, are used in biological reprocessing. Composing is a normal biological mechanism that is carried out under control conditions. One of the ends of the stock is natural gas, which is used to produce heat and electricity. Biological reprocessing is commonly used for the disposal of industrial waste.

5. Animal feed:

Food waste is a serious issue and needs serious consideration. According to the United States Department of Agriculture, between 30 and 40 percent of all food created by the United States is spent on food by retailers and customers. This is a major problem as the food value is estimated to be \$161 billion. The nation is leading the world in terms of food waste, and the cause is self-explanatory. Food can be preserved by manure and livestock feed and this is also one of the ecological types of waste management methods.

Waste disposal process as per the organizational procedures

Waste Management & Disposal —

There are three steps necessary to properly manage waste:

- Identify Waste
- Evaluate Waste
- Manage Waste

1. Identify Waste:

First step of waste management is to identify the waste in which we need identify that whether waste is non-hazardous solid waste, recycle waste or hazardous waste

2. Evaluate Waste:

Second step in waste management is Evaluate Waste . Waste may be evaluate by following manner

- Recyclable material (e.g., paper, soda cans)
- Compostable organic waste (e.g. food, animal bedding, biodegradable plastics)
- · Non-hazardous solid waste
- Hazardous radioactive waste: containing or contaminated with a radioactive isotope
- Hazardous biological waste: containing or contaminated with an infectious or potentially infectious agent, a biological toxin, animal carcasses, genetically modified organisms, recombinant DNA, etc.
- Hazardous chemical waste: waste chemicals, products which are chemical in nature (cleaning agents, paint, motor oil, and pharmaceutics), products that contain chemicals (fluorescent lamps, thermometers), or materials contaminated with chemicals (contaminated soil or rags)
- Otherwise, Regulated Material: asbestos, car batteries, contaminated soil, and construction debris

3. Manage Waste:

Once the waste is evaluated it should be managed according to guidelines of Management

Importance Of Efficient Utilisation Of Water, Electricity And Other Resources

Water use efficiency, the ratio of yield to water used to raise crop also indicates that India uses 2-3 times more water than China, Brazil and the US to produce one unit of food crop. This clearly shows that India spends more water for irrigation and that could also be very well reduced as like other countries.



Use these 6 steps to analyse water efficiency and reduce water use in your workplace:

- 1. get management on side
- 2. collect information
- 3. list end uses
- 4. assess water uses
- 5. identify and implement water saving ideas
- 6. review and report.

The following areas are common to small and large enterprises and are the easiest places to start making water and cost savings.

Make your staff water wise _____

- Talk to staff about your water savings initiatives. Include water savings policies and procedures in staff inductions.
- Encourage staff to contribute to water saving ideas.
- Discuss water efficiency at team meetings and provide regular reports on water use figures.
- Appoint a 'water champion' to check meters and monitor water use.
- Establish a baseline for water use and set achievable targets for saving water.

Taps —

- Install water-efficient taps with an aerator or flow restrictor to use less water.
- Install lever or mixer taps, these save water by quickly reaching a desired temperature.
- Fix leaking taps and replace washers even a slowly dripping tap can waste 10,000 litres of water over a year.
- Avoid washing up under running taps.

Dishwashers _____

- Install water-efficient dishwashers to use 50% less water than average models.
- Wait until you have a full load before washing.
- Scrape, rather than rinse, dishes prior to washing.

Toilets _____

- · Replace single-flush toilets with dual-flush toilets.
- · Regularly check for leaks and fix immediately.
- Install water-efficient urinals with smart controls to reduce unnecessary flushing.

Showers _____

- Encourage staff and customers to limit showers to 4 minutes or less.
- Install water-efficient shower heads, which can use up to 40% less water.
- Fix leaking showers.

Air conditioning _____

- If you use evaporative air conditioners, set your thermostat to 24°C.
- Where possible, use fans and natural ventilation.
- · Switch off heating and cooling after hours.

- Install rainwater tanks.
- Use drought-tolerant plants.
- Use mulch to keep moisture in the soil.
- · Water plants early in the morning or in the evening.

Water-efficient products _____

You can cut water consumption by using white goods with a high water-efficiency rating









5. Employability & Entrepreneurship Skills

Unit 5.1 – Personal Strengths & Value Systems

Unit 5.2 - Digital Literacy: A Recap

Unit 5.3 – Money Matters

Unit 5.4 – Preparing for Employment & Self-Employment

Unit 5.5 - Understanding Entrepreneurship

Unit 5.6 – Preparing to be an Entrepreneur



Key Learning Outcomes <u>*</u>



At the end of this module, you will be able to:

- 1. Explain the meaning of health
- 2. List common health issues
- 3. Discuss tips to prevent common health issues
- 4. Explain the meaning of hygiene
- Discuss the purpose of Swacch Bharat Abhiyan 5.
- 6. Explain the meaning of habit
- 7. Discuss ways to set up a safe work environment
- 8. Discuss critical safety habits to be followed by employees
- 9. Explain the importance of self-analysis
- 10. Discuss motivation with the help of Maslow's Hierarchy of Needs
- 11. Discuss the meaning of achievement motivation
- 12. List the characteristics of entrepreneurs with achievement motivation
- 13. List the different factors that motivate you
- 14. Discuss the role of attitude in self-analysis
- 15. Discuss how to maintain a positive attitude
- 16. List your strengths and weaknesses
- 17. Discuss the qualities of honest people
- 18. Describe the importance of honesty in entrepreneurs
- 19. Discuss the elements of a strong work ethic
- 20. Discuss how to foster a good work ethic
- 21. List the characteristics of highly creative people
- 22. List the characteristics of highly innovative people
- 23. Discuss the benefits of time management
- 24. List the traits of effective time managers
- 25. Describe effective time management technique
- 26. Discuss the importance of anger management
- 27. Describe anger management strategies
- 28. Discuss tips for anger management
- 29. Discuss the causes of stress
- 30. Discuss the symptoms of stress
- 31. Discuss tips for stress management
- 32. Identify the basic parts of a computer
- 33. Identify the basic parts of a keyboard
- 34. Recall basic computer terminology
- 35. Recall the functions of basic computer keys
- 36. Discuss the main applications of MS Office
- 37. Discuss the benefits of Microsoft Outlook
- 38. Discuss the different types of e-commerce
- 39. List the benefits of e-commerce for retailers and customers
- 40. Discuss how the Digital India campaign will help boost e-commerce in India
- 41. Describe how you will sell a product or service on an e-commerce platform
- 42. Discuss the importance of saving money

- 43. Discuss the benefits of saving money
- 44. Discuss the main types of bank accounts
- 45. Describe the process of opening a bank account
- 46. Differentiate between fixed and variable costs
- 47. Describe the main types of investment options
- 48. Describe the different types of insurance products
- 49. Describe the different types of taxes
- 50. Discuss the uses of online banking
- 51. Discuss the main types of electronic funds transfers
- 52. Discuss the steps to prepare for an interview
- 53. Discuss the steps to create an effective Resume
- 54. Discuss the most frequently asked interview questions
- 55. Discuss how to answer the most frequently asked interview questions
- 56. Discuss basic workplace terminology
- 57. Discuss the concept of entrepreneurship
- 58. Discuss the importance of entrepreneurship
- 59. Describe the characteristics of an entrepreneur
- 60. Describe the different types of enterprises
- 61. List the qualities of an effective leader
- 62. Discuss the benefits of effective leadership
- 63. List the traits of an effective team
- 64. Discuss the importance of listening effectively
- 65. Discuss how to listen effectively
- 66. Discuss the importance of speaking effectively
- 67. Discuss how to speak effectively
- 68. Discuss how to solve problems
- 69. List important problem solving traits
- 70. Discuss ways to assess problem solving skills
- 71. Discuss the importance of negotiation
- 72. Discuss how to negotiate
- 73. Discuss how to identify new business opportunities
- 74. Discuss how to identify business opportunities within your business
- 75. Explain the meaning of entrepreneur
- 76. Describe the different types of entrepreneurs
- 77. List the characteristics of entrepreneurs
- 78. Recall entrepreneur success stories
- 79. Discuss the entrepreneurial process
- 80. Describe the entrepreneurship ecosystem
- 81. Discuss the purpose of the Make in India campaign
- 82. Discuss key schemes to promote entrepreneurs
- 83. Discuss the relationship between entrepreneurship and risk appetite
- 84. Discuss the relationship between entrepreneurship and resilience
- 85. Describe the characteristics of a resilient entrepreneur
- 86. Discuss how to deal with failure

- 87. Discuss how market research is carried out
- 88. Describe the 4 Ps of marketing
- 89. Discuss the importance of idea generation
- 90. Recall basic business terminology
- 91. Discuss the need for CRM
- 92. Discuss the benefits of CRM
- 93. Discuss the need for networking
- 94. Discuss the benefits of networking
- 95. Discuss the importance of setting goals
- 96. Differentiate between short-term, medium-term and long-term goals
- 97. Discuss how to write a business plan
- 98. Explain the financial planning process
- 99. Discuss ways to manage your risk
- 100. Describe the procedure and formalities for applying for bank finance
- 101. Discuss how to manage your own enterprise
- 102. List important questions that every entrepreneur should ask before starting an enterprise

UNIT 5.1: Personal Strengths & Value Systems

Unit Objectives



At the end of this unit, participant will be able to:

- 1. Explain the meaning of health
- 2. List common health issues
- 3. Discuss tips to prevent common health issues
- 4. Explain the meaning of hygiene
- 5. Discuss the purpose of Swacch Bharat Abhiyan
- 6. Explain the meaning of habit
- 7. Discuss ways to set up a safe work environment
- 8. Discuss critical safety habits to be followed by employees
- 9. Explain the importance of self-analysis
- 10. Discuss motivation with the help of Maslow's Hierarchy of Needs
- 11. Discuss the meaning of achievement motivation
- 12. List the characteristics of entrepreneurs with achievement motivation
- 13. List the different factors that motivate you
- 14. Discuss the role of attitude in self-analysis
- 15. Discuss how to maintain a positive attitude
- 16. List your strengths and weaknesses
- 17. Discuss the qualities of honest people
- 18. Describe the importance of honesty in entrepreneurs
- 19. Discuss the elements of a strong work ethic
- 20. Discuss how to foster a good work ethic
- 21. List the characteristics of highly creative people
- 22. List the characteristics of highly innovative people
- 23. Discuss the benefits of time management
- 24. List the traits of effective time managers
- 25. Describe effective time management technique
- 26. Discuss the importance of anger management
- 27. Describe anger management strategies
- 28. Discuss tips for anger management
- 29. Discuss the causes of stress
- 30. Discuss the symptoms of stress
- 31. Discuss tips for stress management

5.1.1 Health, Habits, Hygiene: What is Health?

As per the World Health Organization (WHO), health is a "State of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity." This means being healthy does not simply mean not being unhealthy – it also means you need to be at peace emotionally, and feel fit physically. For example, you cannot say you are healthy simply because you do not have any physical ailments like a cold or cough.

Υ	You also need to think about whether you are feeling calm, relaxed and happy.					
С	Common Health Issues					
S	Some common health issues are:					
•	 Asthma Skin Disorders Depression and Anxiety Diabetes Cough, Cold, Sore Throat Difficulty Sleeping 					
P	revent Health Issues					
 Taking measures to prevent ill health is always better than curing a disease or sickness. You can stay healthy by: Eating healthy foods like fruits, vegetables and nuts Cutting back on unhealthy and sugary foods Drinking enough water everyday Not smoking or drinking alcohol Exercising for at least 30 minutes a day, 4-5 times a week Taking vaccinations when required Practicing yoga exercises and meditation How many of these health standards do you follow? Tick the ones that apply to you. 						
1.	Get minimum 7-8 hours of sleep every night.					
2.	Avoid checking email first thing in the morning and right before you go to bed at night.					
3.	Don't skip meals – eat regular meals at correct meal times.					
4.	Read a little bit every single day.					
5.	Eat more home cooked food than junk food.					
6.	Stand more than you sit.					
7. 8.	Drink a glass of water first thing in the morning and have at least 8 glasses of water through the day. Go to the doctor and dentist for regular check-ups.					
9.	Exercise for 30 minutes at least 5 days a week.					
10.	Avoid consuming lots of aerated beverages.					

What is Hygiene?

As per the World Health Organization (WHO), "Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases." In other words, hygiene means ensuring that you do whatever is required to keep your surroundings clean, so that you reduce the chances of spreading germs and diseases.

For instance, think about the kitchen in your home. Good hygiene means ensuring that the kitchen is always spick and span, the food is put away, dishes are washed and dustbins are not overflowing with garbage. Doing all this will reduce the chances of attracting pests like rats or cockroaches, and prevent the growth of fungus and other bacteria, which could spread disease.

How many of these health standards do you follow? Tick the ones that you.	apply to
1. Have a bath or shower every day with soap — and wash your hair with shampoo 2-3 times a week.	
2. Wear a fresh pair of clean undergarments every day.	
3. Brush your teeth in the morning and before going to bed.	
4. Cut your fingernails and toenails regularly.	
5. Wash your hands with soap after going to the toilet.	
6. Use an anti-perspirant deodorant on your underarms if you sweat a lot.	
7. Wash your hands with soap before cooking or eating.	
8. Stay home when you are sick, so other people don't catch what you have.	
9. Wash dirty clothes with laundry soap before wearing them again.	
10. Cover your nose with a tissue/your hand when coughing or sneezing.	
See how healthy and hygienic you are, by giving yourself 1 point for every ticked so Then take a look at what your score means.	tatement!
Your Score	
0-7/20 : You need to work a lot harder to stay fit and fine! Make it a point to pra habits daily and see how much better you feel!	ctice good
7-14/20 : Not bad, but there is scope for improvement! Try and add a few more g to your daily routine.	ood habits
44.30/30. Coast into Management to an arrangement of the second state of the second st	

14-20/20: Great job! Keep up the good work! Your body and mind thank you!

We have already discussed the importance of following good hygiene and health practices for ourselves. But, it is not enough for us to be healthy and hygienic. We must also extend this standard to our homes, our immediate surroundings and to our country as a whole.

Swachh Bharat Abhiyan

The 'Swachh Bharat Abhiyan' (Clean India Mission) launched by Prime Minister Shri Narendra Modi on 2nd October 2014, believes in doing exactly this. The aim of this mission is to clean the streets and roads of India and raise the overall level of cleanliness. Currently this mission covers 4,041 cities and towns across the country. Millions of our people have taken the pledge for a clean India. You should take the pledge too, and do everything possible to keep our country clean!

What are Habits?

A habit is a behaviour that is repeated frequently. All of us have good habits and bad habits. Keep in mind the phrase by John Dryden: "We first make our habits, and then our habits make us." This is why it is so important that you make good habits a way of life, and consciously avoid practicing bad habits.

Some good habits that you should make part of your daily routine are:

- Always having a positive attitude
- Smiling! Make it a habit to smile as often as possible
- Making exercise a part of your daily routine
- Making time for family and friends
- Reading motivational and inspirational stories
- Going to bed early and waking up early

Some bad habits that you should quit immediately are:

Skipping breakfast

- Smoking, drinking alcohol and doing drugs
- not hungry
- Snacking frequently even when you are Spending more money than you can afford
- Eating too much fattening and sugary food
 - Worrying about unimportant issues
 - Staying up late and waking up late



- Following healthy and hygienic practices every day will make you feel good mentally and physically.
- Hygiene is two-thirds of health so good hygiene will help you stay strong and healthy

5.1.2: Safety: Tips to Design a Safe Workplace

Every employer is obligated to ensure that his workplace follows the highest possible safety protocol. When setting up a business, owners must make it a point to:

- Use ergonomically designed furniture and equipment to avoid stooping and twisting
- Provide mechanical aids to avoid lifting or carrying heavy objects
- Have protective equipment on hand for hazardous jobs
- Designate emergency exits and ensure they are easily accessible
- Set down health codes and ensure they are implemented
- Follow the practice of regular safety inspections in and around the workplace
- Ensure regular building inspections are conducted
- Get expert advice on workplace safety and follow it

Non-Negotiable Employee Safety Habits

Every employer is obligated to ensure that his workplace follows the highest possible safety protocol. When setting up a business, owners must make it a point to:

- Immediately report unsafe conditions to a supervisor
- Recognize and report safety hazards that could lead to slips, trips and falls
- Report all injuries and accidents to a supervisor
- Wear the correct protective equipment when required
- Learn how to correctly use equipment provided for safety purposes
- Be aware of and avoid actions that could endanger other people
- Take rest breaks during the day and some time off from work during the week

Tips



- Be aware of what emergency number to call at the time of a workplace emergency
- Practice evacuation drills regularly to avoid chaotic evacuati

5.1.3 Self-Analysis – Attitude, Achievement Motivation

To truly achieve your full potential, you need to take a deep look inside yourself and find out what kind of person you really are. This attempt to understand your personality is known as self-analysis. Assessing yourself in this manner will help you grow, and will also help you to identify areas within yourself that need to be further developed, changed or eliminated. You can better understand yourself by taking a deep look at what motivates you, what your attitude is like, and what your strengths and weaknesses are.

What is Motivation?

Very simply put, motivation is your reason for acting or behaving in a certain manner. It is important to understand that not everyone is motivated by the same desires – people are motivated by many, many different things. We can understand this better by looking at Maslow's Hierarchy of Needs.

Maslow's Hierarchy of Needs

Famous American psychologist Abraham Maslow wanted to understand what motivates people. He believed that people have five types of needs, ranging from very basic needs (called physiological needs) to more important needs that are required for self-growth (called self-actualization needs). Between the physiological and self-actualization needs are three other needs — safety needs, belongingness and love needs, and esteem needs. These needs are usually shown as a pyramid with five levels and are known as Maslow's Hierarchy of Needs.

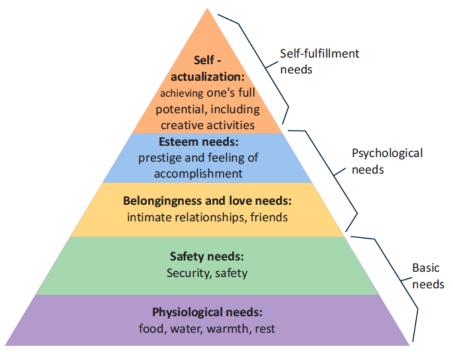


Fig. 5.1.1: Maslow's Hierarchy of Needs

As you can see from the pyramid, the lowest level depicts the most basic needs. Maslow believed that our behaviour is motivated by our basic needs, until those needs are met. Once they are fulfilled, we move to the next level and are motived by the next level of needs. Let's understand this better with an example.

Rupa comes from a very poor family. She never has enough food, water, warmth or rest. According to Maslow, until Rupa is sure that she will get these basic needs, she will not even think about the next level of needs – her safety needs. But, once Rupa is confident that her basic needs will be met, she will move to the next level, and her behaviour will then be motivated by her need for security and safety. Once these new needs are met, Rupa will once again move to the next level, and be motivated by her need for relationships and friends. Once this need is satisfied, Rupa will then focus on the fourth level of needs – her esteem needs, after which she will move up to the fifth and last level of needs – the desire to achieve her full potential.

Understanding Achievement Motivation

We now know that people are motivated by basic, psychological and self-fulfilment needs. However, certain people are also motivated by the achievement of highly challenging accomplishments. This is known as Achievement Motivation, or 'need for achievement'.

The level of motivation achievement in a person differs from individual to individual. It is important that entrepreneurs have a high level of achievement motivation — a deep desire to accomplish something important and unique. It is equally important that they hire people who are also highly motivated by challenges and success.

What Motivates You?

What are the things that really motivate you? List down five things that really motivate you. Remember to answer honestly!

I am motivated by:					

Characteristics of Entrepreneurs with Achievement Motivation

Entrepreneurs with achievement motivation can be described as follows:

- Unafraid to take risks for personal accomplishment
- Love being challenged
- Future-oriented
- Flexible and adaptive
- Value negative feedback more than positive feedback
 - Think about it:
- How many of these traits do you have?

- Very persistent when it comes to achieving goals
- Extremely courageous
- Highly creative and innovative
- Restless constantly looking to achieve more
- Feel personally responsible for solving problems
- Can you think of entrepreneurs who display these traits?

What is Attitude?

Now that we understand why motivation is so important for self-analysis, let's look at the role our attitude plays in better understanding ourselves. Attitude can be described as your tendency (positive or negative), to think and feel about someone or something. Attitude is the foundation for success in every aspect of life. Our attitude can be our best friend or our worst enemy. In other words:

Now that we understand why motivation is so important for self-analysis, let's look at the role our attitude plays in better understanding ourselves. Attitude can be described as your

tendency (positive or negative), to think and feel about someone or something. Attitude is the foundation for success in every aspect of life. Our attitude can be our best friend or our worst enemy. In other words:

"The only disability in life is a bad attitude."

When you start a business, you are sure to encounter a wide variety of emotions, from difficult times and failures to good times and successes. Your attitude is what will see you through the tough times and guide you towards success. Attitude is also infectious. It affects everyone around you, from your customers to your employees to your investors. A positive attitude helps build confidence in the workplace while a negative attitude is likely to result in the demotivation of your people.

How to Cultivate a Positive Attitude?

The good news is attitude is a choice. So, it is possible to improve, control and change our attitude, if we decide we want to!

The following tips help foster a positive mindset:

- Remember that you control your attitude, not the other way around
- Devote at least 15 minutes a day towards reading, watching or listening to something positive
- Avoid negative people who only complain and stop complaining yourself
- Expand your vocabulary with positive words and delete negative phrases from your mind
- Be appreciative and focus on what's good in yourself, in your life, and in others
- Stop thinking of yourself as a victim and start being proactive
- Imagine yourself succeeding and achieving your goals

What Are Your Strengths and Weaknesses?

Another way to analyse yourself is by honestly identifying your strengths and weaknesses. This will help you use your strengths to your best advantage and reduce your weaknesses.

Note down all your strengths and weaknesses in the two columns below. Remember to be honest with yourself!

Strengths	Weaknesses



- Achievement motivation can be learned.
- Don't be afraid to make mistakes.
- Train yourself to finish what you start.
- Dream big.

5.1.4 Honesty & Work Ethics: What is Honesty?

Honesty is the quality of being fair and truthful. It means speaking and acting in a manner that inspires trust. A person who is described as honest is seen as truthful and sincere, and as someone who isn't deceitful or devious and doesn't steal or cheat. There are two dimensions of honesty – one is honesty in communication and the other is honesty in conduct.

Honesty is an extremely important trait because it results in peace of mind and builds relationships that are based on trust. Being dishonest, on the other hand, results in anxiety and leads to relationships full of distrust and conflict.

Qualities of Honest People

Honest individuals have certain distinct characteristics. Some common qualities among honest people are:

- 1. They don't worry about what others think of them. They believe in being themselves they don't bother about whether they are liked or disliked for their personalities.
- 2. They stand up for their beliefs. They won't think twice about giving their honest opinion, even if they are aware that their point of view lies with the minority.
- 3. They are think skinned. This means they are not affected by others judging them harshly for their honest opinions.
- 4. They forge trusting, meaningful and healthy friendships. Honest people usually surround themselves with honest friends. They have faith that their friends will be truthful and upfront with them at all times.
- 5. They are trusted by their peers. They are seen as people who can be counted on for truthful and objective feedback and advice.

Importance of Honesty in Entrepreneurs

One of the most important characteristics of entrepreneurs is honesty. When entrepreneurs are honest with their customers, employees and investors, it shows that they respect those that they work with. It is also important that entrepreneurs remain honest with themselves.

Let's look at how being honest would lead to great benefits for entrepreneurs.

- Honesty and customers: When entrepreneurs are honest with their customers it leads to stronger relationships, which in turn results in business growth and a stronger customer network.
- Honesty and employees: When entrepreneurs build honest relationships with their employees, it leads to more transparency in the workplace, which results in higher work performance and better results.
- Honesty and investors: For entrepreneurs, being honest with investors means not only
 sharing strengths but also candidly disclosing current and potential weaknesses,
 problem areas and solution strategies. Keep in mind that investors have a lot of
 experience with start-ups and are aware that all new companies have problems.
 Claiming that everything is perfectly fine and running smoothly is a red flag for most
 investors.
- **Honesty with oneself:** The consequences of being dishonest with oneself can lead to dire results, especially in the case of entrepreneurs. For entrepreneurs to succeed, it is

critical that they remain realistic about their situation at all times, and accurately judge every aspect of their enterprise for what it truly is.

What are Work Ethics?

Being ethical in the workplace means displaying values like honesty, integrity and respect in all your decisions and communications. It means not displaying negative qualities like lying, eating and stealing.

Workplace ethics play a big role in the profitability of a company. It is as crucial to an enterprise as high morale and teamwork. This is why most companies lay down specific workplace ethic guidelines that must compulsorily be followed by their employees.

These guidelines are typically outlined in a company's employee handbook.

Elements of a Strong Work Ethic

An entrepreneur must display strong work ethics, as well as hire only those individuals who believe in and display the same level of ethical behaviour in the workplace. Some elements of a strong work ethic are:

- **Professionalism**: This involves everything from how you present yourself in a corporate setting to the manner in which you treat others in the workplace.
- **Respectfulness**: This means remaining poised and diplomatic regardless of how stressful or volatile a situation is.
- **Dependability**: This means always keeping your word, whether it's arriving on time for a meeting or delivering work on time.
- **Dedication**: This means refusing to quit until the designated work is done, and completing the work at the highest possible level of excellence.
- **Determination**: This means embracing obstacles as challenges rather than letting them stop you, and pushing ahead with purpose and resilience to get the desired results.
- **Accountability**: This means taking responsibility for your actions and the consequences of your actions, and not making excuses for your mistakes.
- **Humility**: This means acknowledging everyone's efforts and had work, and sharing the credit for accomplishments.

How to Foster a Good Work Ethic?

As an entrepreneur, it is important that you clearly define the kind of behaviour that you expect from each and every team member in the workplace. You should make it clear that you expect employees to display positive work ethics like:

- **Honesty**: All work assigned to a person should be done with complete honesty, without any deceit or lies.
- Good attitude: All team members should be optimistic, energetic, and positive.
- **Reliability**: Employees should show up where they are supposed to be, when they are supposed to be there.
- **Good work habits**: Employees should always be well groomed, never use inappropriate language, conduct themselves professionally at all times and so on.
- **Initiative**: Doing the bare minimum is not enough. Every team member needs to be proactive and show initiative.

- Trustworthiness: Trust is non-negotiable. If an employee cannot be trusted, it's time to let that employee go.
- Respect: Employees need to respect the company, the law, their work, their colleagues and themselves.
- Integrity: Each and every team member should be completely ethical and must display above board behaviour at all times.
- Efficiency: Efficient employees help a company grow while inefficient employees result in a waste of time and resources.



- Don't get angry when someone tells you the truth and you don't like what you hear.
- Always be willing to accept responsibility for your mistakes.

5.1.5 Creativity & Innovation: What is Creativity?

Creativity means thinking outside the box. It means viewing things in new ways or from different perspectives, and then converting these ideas into reality. Creativity involves two parts: thinking and producing. Simply having an idea makes you imaginative, not creative. However, having an idea and acting on it makes you creative.

Characteristics of Highly Creative People

Some characteristics of creative people are:

- They are imaginative and playful
- They see issues from different angles
- They notice small details
- They have very little tolerance for boredom
- They detest rules and routine
- They love to daydream
- They are very curious

What is Innovation?

There are many different definitions of innovation. In simple terms, innovation means turning an idea into a solution that adds value. It can also mean adding value by implementing a new product, service or process, or significantly improving on an existing product, service or process.

Characteristics of Highly Innovative People

Some characteristics of highly innovative people are:

- They embrace doing things differently
- They are highly proactive and persistent
- They don't believe in taking shortcuts
- They are organized, cautious and riskaverse
- They are not afraid to be unconventional



- Take regular breaks from your creative work to recharge yourself and gain fresh perspective.
- Build prototypes frequently, test them out, get feedback, and make the required changes.

5.1.6 Time Management: What is Time Management?

Time management is the process organizing your time, and deciding how to allocate your time between different activities. Good time management is the difference between working smart (getting more done in less time) and working hard (working for more time to get more done).

Effective time management leads to an efficient work output, even when you are faced with tight deadlines and high pressure situations. On the other hand, not managing your time effectively results in inefficient output and increases stress and anxiety.

Benefits of Time Management

Time management can lead to huge benefits like:

- Greater productivity
- Better professional reputation
- Higher chances for career advancement
- Higher efficiency
- Reduced stress
- Greater opportunities to achieve goals

Not managing time effectively can result in undesirable consequences like:

- Missing deadlines
- Substandard work quality
- Stalled career

- Inefficient work output
- Poor professional reputation
- Increase in stress and anxiety

Traits of Effective Time Managers

Some traits of effective time managers are:

- They begin projects early
- They set daily objectives
- They modify plans if required, to achieve better results
- They are flexible and open-minded
- They inform people in advance if their help will be required
- They know how to say no

- They break tasks into steps with specific deadlines
- They continually review long term goals
- They think of alternate solutions if and when required
- They ask for help when required
- They create backup plans

Effective Time Management Techniques

You can manage your time better by putting into practice certain time management techniques. Some helpful tips are:

- Plan out your day as well as plan for interruptions. Give yourself at least 30 minutes to figure out your time plan. In your plan, schedule some time for interruptions.
- Put up a "Do Not Disturb" sign when you absolutely have to complete a certain amount of work.

- Close your mind to all distractions. Train yourself to ignore ringing phones, don't reply to chat messages and disconnect from social media sites.
- Delegate your work. This will not only help your work get done faster, but will also show you the unique skills and abilities of those around you.
- Stop procrastinating. Remind yourself that procrastination typically arises due to the fear of failure or the belief that you cannot do things as perfectly as you wish to do them.
- Prioritize. List each task to be completed in order of its urgency or importance level. Then focus on completing each task, one by one.
- Maintain a log of your work activities. Analyse the log to help you understand how efficient you are, and how much time is wasted every day.
- Create time management goals to reduce time wastage.



- Always complete the most important tasks first.
- Get at least 7 8 hours of sleep every day.
- Start your day early.
- Don't waste too much time on small, unimportant details.
- Set a time limit for every task that you will undertake.
- Give yourself some time to unwind between tasks.

5.1.7 Anger Management: What is Anger Management?

Anger management is the process of:

- 1. Learning to recognize the signs that you, or someone else, is becoming angry
- 2. Taking the best course of action to calm down the situation in a positive way

Anger management does not mean suppressing anger.

Importance of Anger Management

Anger is a perfectly normal human emotion. In fact, when managed the right way, anger can be considered a healthy emotion. However, if it is not kept in check, anger can make us act inappropriately and can lead to us saying or doing things that we will likely later regret. Extreme anger can:

- **Hurt you physically**: It leads to heart disease, diabetes, a weakened immune system, insomnia, and high blood pressure.
- **Hurt you mentally**: It can cloud your thinking and lead to stress, depression and mental health issues.
- **Hurt your career**: It can result in alienating your colleagues, bosses, clients and lead to the loss of respect.
- **Hurt your relationships**: It makes it hard for your family and friends to trust you, be honest with you and feel comfortable around you.

This is why anger management, or managing anger appropriately, is so important.

Anger Management Strategies

Here are some strategies that can help you control your anger:

Strategy 1: Relaxation

Something as simple as breathing deeply and looking at relaxing images works wonders in calming down angry feelings.

Try this simple breathing exercise:

- 1. Take a deep breath from your diaphragm (don't breathe from your chest)
- 2. Visualize your breath coming up from your stomach
- 3. Keep repeating a calming word like 'relax' or 'take it easy' (remember to keep breathing
- 4. deeply while repeating the word)
- 5. Picture a relaxing moment (this can be from your memory or your imagination)
- 6. Follow this relaxation technique daily, especially when you realize that you're starting to feel angry.

Strategy 2: Cognitive Restructuring

Cognitive restructuring means changing the manner in which you think. Anger can make you curse, swear, exaggerate and act very dramatically. When this happens, force yourself to replace your angry thoughts with more logical ones. For instance, instead of thinking 'Everything is ruined' change your mindset and tell yourself 'It's not the end of the world and getting angry won't solve this'.

Strategy 3: Problem Solving

Getting angry about a problem that you cannot control is a perfectly natural response. Sometimes, try as you may, there may not be a solution to the difficulty you are faced with. In such cases, stop focusing on solving the problem, and instead focus on handling and facing the problem. Remind yourself that you will do your best to deal with the situation, but that you will not blame yourself if you don't get the solution you desire.

Strategy 4: Better Communication

When you're angry, it is very easy to jump to inaccurate conclusions. In this case, you need to force yourself to stop reacting, and think carefully about what you want to say, before saying it. Avoid saying the first thing that enters your head. Force yourself to listen carefully to what the other person is saying. Then think about the conversation before responding.

Strategy 5: Changing Your Environment

If you find that your environment is the cause of your anger, try and give yourself a break from your surroundings. Make an active decision to schedule some personal time for yourself, especially on days that are very hectic and stressful. Having even a brief amount of quiet or alone time is sure to help calm you down.

Tips for Anger Management

The following tips will help you keep your anger in check:

- Take some time to collect your thoughts before you speak out in anger.
- Express the reason for your anger in an assertive, but non-confrontational manner once you have calmed down.
- Do some form of physical exercise like running or walking briskly when you feel yourself getting angry.
- Make short breaks part of your daily routine, especially during days that are stressful.
- Focus on how to solve a problem that's making you angry, rather than focusing on the fact that the problem is making you angry.



- Try to forgive those who anger you, rather than hold a grudge against them.
- Avoid using sarcasm and hurling insults. Instead, try and explain the reason for your frustration in a polite and mature manner.

5.1.8 Stress Management: What is Stress?

We say we are 'stressed' when we feel overloaded and unsure of our ability to deal with the pressures placed on us. Anything that challenges or threatens our well-being can be defined as a stress. It is important to note that stress can be good and bad. While good stress keeps us going, negative stress undermines our mental and physical health. This is why it is so important to manage negative stress effectively.

Causes of Stress

Stress can be caused by internal and external factors.

Internal causes of stress

- Constant worry
- Rigid thinking
- Unrealistic expectations

External causes of stress

- Major life changes
- Difficulties with relationships
- Having too much to do

- Pessimism
- Negative self-talk
- All in or all out attitude
- Difficulties at work or in school
- Financial difficulties
- Worrying about one's children and/or family

Symptoms of Stress

Stress can manifest itself in numerous ways. Take a look at the cognitive, emotional, physical and behavioural symptoms of stress.

Cognitive Symptoms

- Memory problems
- Concentration issues
- Lack of judgement
- Pessimism
- Anxiety
- Constant worrying

Emotional Symptoms

- Depression
- Agitation
- Irritability
- Loneliness
- Anxiety
- Anger

Physical Symptoms

- Aches and pain
- Diarrhoea or constipation
- Nausea
- Dizziness
- Chest pain and/or rapid heartbeat
- Frequent cold or flu like feelings

Behavioural Symptoms

- Increase or decrease in appetite
- Over sleeping or not sleeping enough
- Withdrawing socially
- Ignoring responsibilities
- Consumption of alcohol or cigarettes
- Nervous habits like nail biting and pacing

Tips to Manage Stress

The following tips can help you manage your stress better:

- Note down the different ways in which you can handle the various sources of your stress.
- Remember that you cannot control everything, but you can control how you respond.
- Discuss your feelings, opinions and beliefs rather than reacting angrily, defensively or passively.
- Practice relaxation techniques like meditation, yoga or tai chi when you start feeling stressed.
- Devote a part of your day towards exercise.
- Eat healthy foods like fruits and vegetables. Avoid unhealthy foods especially those containing large amounts of sugar.
- Plan your day so that you can manage your time better, with less stress.
- Say no to people and things when required.
- Schedule time to pursue your hobbies and interests.
- Ensure you get at least 7-8 hours of sleep.
- Reduce your caffeine intake.
- Increase the time spent with family and friends.



- Force yourself to smile even if you feel stressed. Smiling makes us feel relaxed and happy.
- Stop yourself from feeling and thinking like a victim. Change your attitude and focus on being proactive.

UNIT 5.2: Digital Literacy: A Recap

Unit Objectives



At the end of this unit, you will be able to:

- 1. Identify the basic parts of a computer
- 2. Identify the basic parts of a keyboard
- 3. Recall basic computer terminology
- 4. Recall the functions of basic computer keys
- 5. Discuss the main applications of MS Office
- 6. Discuss the benefits of Microsoft Outlook
- 7. Discuss the different types of e-commerce
- 8. List the benefits of e-commerce for retailers and customers
- 9. Discuss how the Digital India campaign will help boost e-commerce in India

5.2.1 Computer and Internet basics: Basic Parts of a Computer

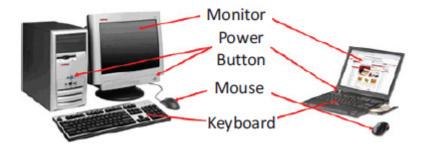


Fig.7.2.1. Parts of a Computer

- Central Processing Unit (CPU): The brain of the computer. It interprets and carries out program instructions.
- Hard Drive: A device that stores large amounts of data.
- Monitor: The device that contains the computer screen where the information is visually displayed.
- Mouse: A hand-held device used to point to items on the monitor.
- **Speakers**: Devices that enable you to hear sound from the computer.
- **Printer**: A device that converts output from a computer into printed paper documents.

Basic Parts of a Keyboard



Fig.7.2.2. Parts of a Keyboard

- Arrow Keys: Press these keys to move your cursor.
- Space bar: Adds a space.
- Enter/Return: Moves your cursor to a new line.
- Shift: Press this key if you want to type a capital letter or the upper symbol of a key.
- **Caps Lock**: Press this key if you want all the letters you type to be capital letters. Press it again to revert back to typing lowercase letters.
- Backspace: Deletes everything to the left of your cursor.

Basic Internet Terms

- **The Internet:** A vast, international collection of computer networks that transfers information.
- The World Wide Web: A system that lets you access information on the Internet.
- **Website:** A location on the World Wide Web (and Internet) that contains information about a specific topic.
- **Homepage:** Provides information about a website and directs you to other pages on that website.
- **Link/Hyperlink:** A highlighted or underlined icon, graphic, or text that takes you to another file or object.
- Web Address/URL: The address for a website.
- Address Box: A box in the browser window where you can type in a web address.



- When visiting a .com address, there no need to type http:// or even www. Just type the
 name of the website and then press Ctrl + Enter. (Example: Type 'apple' and press Ctrl +
 Enter to go to www.apple.com)
- Press the Ctrl key and press the + or to increase and decrease the size of text.
- Press F5 or Ctrl + R to refresh or reload a web page.

5.2.2 MS Office and Email: About MS Office

MS Office or Microsoft Office is a suite of computer programs developed by Microsoft. Although meant for all users, it offers different versions that cater specifically to students, home users and business users. All the programs are compatible with both, Windows and Macintosh.

Most Popular Office Products

Some of the most popular and universally used MS Office applications are:

- **Microsoft Word**: Allows users to type text and add images to a document.
- Microsoft Excel: Allows users to enter data into a spreadsheet and create calculations and graphs.
- Microsoft PowerPoint: Allows users to add text, pictures and media and create slideshows and presentations.
- Microsoft Outlook: Allows users to send and receive email.
- Microsoft OneNote: Allows users to make drawings and notes with the feel of a pen on paper.
- Microsoft Access: Allows users to store data over many tables.

Why Choose Microsoft Outlook?

A popular email management choice especially in the workplace, Microsoft Outlook also includes an address book, notebook, web browser and calendar. Some major benefits of this program are:

- Integrated search function: You can use keywords to search for data across all Outlook
- Enhanced security: Your email is safe from hackers, junk mail and phishing website
- Email syncing: Sync your mail with your calendar, contact list, notes in One Note and...your phone!
- Offline access to email: No Internet? No problem! Write emails offline and send them when you're connected again.

Tips 🖳



- Press Ctrl+R as a shortcut method to reply to email.
- Set your desktop notifications only for very important emails.
- Flag messages quickly by selecting messages and hitting the Insert key.
- Save frequently sent emails as a template to reuse again and again.
- Conveniently save important emails as files.

5.2.3 E-Commerce: What is E-Commerce?

E-commerce is the buying or selling of goods and services, or the transmitting of money or data, electronically on the internet. E-Commerce is the short form for "electronic commerce."

Examples of E-Commerce

Some examples of e-commerce are:

- Online shopping
- Online auctions
- Online ticketing

- Electronic payments
- Internet banking

Types of E-Commerce

E-commerce can be classified based on the types of participants in the transaction. The main types of e-commerce are:

- Business to Business (B2B): Both the transacting parties are businesses.
- **Business to Consumer (B2C)**: Businesses sell electronically to end-consumers.
- **Consumer to Consumer (C2C):** Consumers come together to buy, sell or trade items to other consumers.
- **Consumer-to-Business (C2B)**: Consumers make products or services available for purchase to companies looking for exactly those services or products.
- **Business-to-Administration (B2A)**: Online transactions conducted between companies and public administration.
- Consumer-to-Administration (C2A): Online transactions conducted between individual and public administration.

Benefits of E-Commerce

The e-commerce business provides some benefits for retailers and customers.

Benefits for retailers

- Establishes an online presence
- Reduces operational costs by removing overhead costs
- Increases brand awareness through the use of good keywords
- Increases sales by removing geographical and time constraints

Benefits for customers

- Offers a wider range of choice than any physical store
- Enables goods and services to be purchased from remote locations
- Enables consumers to perform price comparisons

Digital India Campaign

Prime Minister Narendra Modi launched the Digital India campaign in 2015, with the objective of offering every citizen of India access to digital services, knowledge and information. The campaign aims to improve the country's online infrastructure and increase internet connectivity, thus boosting the e-commerce industry.

Currently, the majority of online transactions come from tier 2 and tier 3 cities. Once the Digital India campaign is in place, the government will deliver services through mobile connectivity, which will help deliver internet to remote corners of the country. This will help the e-commerce market to enter India's tier 4 towns and rural areas.

E-Commerce Activity

Choose a product or service that you want to sell online. Write a brief note explaining how you will use existing e-commerce platforms, or create a new e-commerce platform, to sell your product or service.



- Before launching your e-commerce platform, test everything.
- Pay close and personal attention to your social media.

UNIT 5.3: Money Matters

Unit Objectives 6



At the end of this unit, you will be able to:

- 1. Discuss the importance of saving money
- 2. Discuss the benefits of saving money
- 3. Discuss the main types of bank accounts
- 4. Describe the process of opening a bank account
- 5. Differentiate between fixed and variable costs
- 6. Describe the main types of investment options
- 7. Describe the different types of insurance products
- 8. Describe the different types of taxes
- 9. Discuss the uses of online banking
- 10. Discuss the main types of electronic funds transfers

5.3.1 Personal Finance – Why to Save? Importance of Saving

We all know that the future is unpredictable. You never know what will happen tomorrow, next week or next year. That's why saving money steadily through the years is so important. Saving money will help improve your financial situation over time. But more importantly, knowing that you have money stashed away for an emergency will give you peace of mind. Saving money also opens the door to many more options and possibilities.

Benefits of Saving

Inculcating the habit of saving leads to a vast number of benefits. Saving helps you:

- Become financially independent: When you have enough money saved up to feel secure you can start making your choices, from taking a vacation whenever you want, to switching careers or starting your own business.
- Invest in yourself through education: Through saving, you can earn enough to pay up for courses that will add to your professional experience and ultimately result in higher paying jobs.
- Get out of debt: Once you have saved enough as a reserve fund, you can use your savings to pay off debts like loans or bills that have accumulated over time.
- Be prepared for surprise expenses: Having money saved enables you to pay for unforeseen expenses like sudden car or house repairs, without feeling financially stressed.
- Pay for emergencies: Saving helps you deal with emergencies like sudden health issues or emergency trips without feeling financially burdened.

- Afford large purchases and achieve major goals: Saving diligently makes it possible to place down payments towards major purchases and goals, like buying a home or a car.
- **Retire**: The money you have saved over the years will keep you comfortable when you no longer have the income you would get from your job.

Tips



- Break your spending habit. Try not spending on one expensive item per week, and put the money that you would have spent into your savings.
- Decide that you will not buy anything on certain days or weeks and stick to your word.

5.3.2 Types of Bank Accounts, Opening a Bank Account

Types of Bank Accounts

In India, banks offer four main types of bank accounts. These are:

- Current Accounts
- Savings Accounts
- Recurring Deposit Accounts
- Fixed Deposit Accounts

Current Accounts

Current accounts offer the most liquid deposits and thus, are best suited for businessmen and companies. As these accounts are not meant for investments and savings, there is no imposed limit on the number or amount of transactions that can be made on any given day. Current account holders are not paid any interest on the amounts held in their accounts. They are charged for certain services offered on such accounts.

Saving Accounts

Savings accounts are meant to promote savings, and are therefore the number one choice for salaried individuals, pensioners and students. While there is no restriction on the number and amount of deposits made, there are usually restrictions on the number and amount of withdrawals. Savings account holders are paid interest on their savings.

Recurring Deposit Accounts

Recurring Deposit accounts, also called RD accounts, are the accounts of choice for those who want to save an amount every month, but are unable to invest a large sum at one time. Such account holders deposit a small, fixed amount every month for a pre-determined period (minimum 6 months). Defaulting on a monthly payment results in the account holder being charged a penalty amount. The total amount is repaid with interest at the end of the specified period.

Fixed Deposit Accounts

Fixed Deposit accounts, also called FD accounts, are ideal for those who wish to deposit their savings for a long term in return for a high rate of interest. The rate of interest offered depends on the amount deposited and the time period, and also differs from bank to bank. In the case of an FD, a certain amount of money is deposited by the account holder for a fixed period of time. The money can be withdrawn when the period expires. If necessary, the depositor can break the fixed deposit prematurely. However, this usually attracts a penalty amount which also differs from bank to bank.

Opening a Bank Account



Opening a bank account is quite a simple process. Take a look at the steps to open an account of your own:

Step 1: Fill in the Account Opening Form

This form requires you to provide the following information:

- Personal details (name, address, phone number, date of birth, gender, occupation, address)
- Method of receiving your account statement (hard copy/email)
- Details of your initial deposit (cash/cheque)
- Manner of operating your account (online/mobile banking/traditional via cheque, slip books)

Ensure that you sign wherever required on the form.

Step 2: Affix your Photograph

Stick a recent photograph of yourself in the allotted space on the form.

Step 3: Provide your Know Your Customer (KYC) Details

KYC is a process that helps banks verify the identity and address of their customers. To open an account, every individual need to submit certain approved documents with respect to photo identity (ID) and address proof. Some Officially Valid Documents (OVDs) are:

- Passport
- Driving License
- Voters' Identity Card
- PAN Card
- UIDAI (Aadhar) Card

Step 4: Submit All your Documents

Submit the completed Account Opening Form and KYC documents. Then wait until the forms are processed and your account has been opened!



- Select the right type of account.
- Fill in complete nomination details.
- Ask about fees.

- Understand the rules.
- Check for online banking it's convenient!
- Keep an eye on your bank balance.

5.3.3 Costs: Fixed vs Variable: What are Fixed and **Variable Costs?**

Fixed costs and variable costs together make up a company's total cost. These are the two types of costs that companies have to bear when producing goods and services. A fixed cost does not change with the volume of goods or services a company produces. It always remains the same.

A variable cost, on the other hand, increases and decreases depending on the volume of goods and services produced. In other words, it varies with the amount produced.

Differences between Fixed and Variable Costs

Let's take a look at some of the main differences between fixed and variable costs:

Criteria	Fixed Costs	Variable Costs
Meaning	A cost that stays the same, regardless of the output produced.	A cost that changes when the
Nature	Time related.	Volume related.
Incurred	Incurred irrespective of units being produced.	Incurred only when units are produced
Unit cost	Inversely proportional to the number of units produced	Remains the same, per unit.
Examples	Depreciation, rent, salary, insurance and tax	Material consumed, wages, commission on sales and packing expenses

Fig 5.3.1: Differences between fixed and variable costs



When trying to determine whether a cost is fixed or variable, simply ask the following question: Will the particular cost change if the company stopped its production activities? If the answer is no, then it is a fixed cost. If the answer is yes, then it is probably a variable cost.

5.3.4 Investment, Insurance and Taxes: Investment

Investment means that money is spent today with the aim of reaping financial gains at a future time. The main types of investment options are as follows:

- Bonds: Bonds are instruments used by public and private companies to raise large sums of money – too large to be borrowed from a bank. These bonds are then issued in the public market and are bought by lenders.
- Stocks: Stocks or equity are shares that are issued by companies and are bought by the general public.
- Small Savings Schemes: Small Savings Schemes are tools meant to save money in small amounts. Some popular schemes are the Employees Provident Fund, Sukanya Samriddhi Scheme and National Pension Scheme.
- Mutual Funds: Mutual Funds are professionally managed financial instruments that invest money in different securities on behalf of investors.
- Fixed Deposits: A fixed amount of money is kept aside with a financial institution for a fixed amount of time in return for interest on the money.
- Real Estate: Loans are taken from banks to purchase real estate, which is then leased or sold with the aim of making a profit on the appreciated property price.
- Hedge Funds: Hedge funds invest in both financial derivatives and/or publicly traded securities.
- **Private Equity:** Private Equity is trading in the shares of an operating company that is not publicly listed and whose shares are not available on the stock market.

Insurance

There are two types of insurance – Life Insurance and Non-Life or General Insurance.

Life Insurance

Life Insurance deals with all insurance covering human life.

Life Insurance Products

The main life insurance products are:

Term Insurance: This is the simplest and cheapest form of insurance. It offers financial protection for a specified tenure, say 15 to 20 years. In the case of your death, your family is paid the sum assured. In the case of your surviving the term, the insurer pays nothing.

- **Endowment Policy:** This offers the dual benefit of insurance and investment. Part of the premium is allocated towards the sum assured, while the remaining premium gets invested in equity and debt. It pays a lump sum amount after the specified duration or on the death of the policyholder, whichever is earlier.
- Unit-Linked Insurance Plan (ULIP): Here part of the premium is spent on the life cover, while the remaining amount is invested in equity and debt. It helps develop a regular saving habit.
- Money Back Life Insurance: While the policyholder is alive, periodic payments of the
 partial survival benefits are made during the policy tenure. On the death of the insured,
 the insurance company pays the full sum assured along with survival benefits.
- Whole Life Insurance: It offers the dual benefit of insurance and investment. It offers insurance cover for the whole life of the person or up to 100 years whichever is earlier.

General Insurance

General Insurance deals with all insurance covering assets like animals, agricultural crops, goods, factories, cars and so on.

General Insurance Products

The main general insurance products are:

- **Motor Insurance:** This can be divided into Four-Wheeler Insurance and Two-Wheeler insurance.
- Health Insurance: The main types of health insurance are individual health insurance, family floater health insurance, comprehensive health insurance and critical illness insurance.
- **Travel Insurance:** This can be categorised into Individual Travel Policy, Family Travel Policy, Student Travel Insurance and Senior Citizen Health Insurance.
- **Home Insurance:** This protects the house and its contents from risk.
- Marine Insurance: This insurance covers goods, freight and cargo against loss or damage during transit by rail, road, sea and/or air.

Taxes

There are two types of taxes – Direct Taxes and Indirect Taxes.

Direct Tax

Direct taxes are levied directly on an entity or a person and are non-transferrable. Some examples of Direct Taxes are:

- **Income Tax**: This tax is levied on your earning in a financial year. It is applicable to both, individuals and companies.
- Capital Gains Tax: This tax is payable whenever you receive a sizable amount of money. It is usually of two types short term capital gains from investments held for less than 36 months and long term capital gains from investments held for longer than 36 months.

- **Securities Transaction Tax:** This tax is added to the price of a share. It is levied every time you buy or sell shares
- **Perquisite Tax:** This tax is levied is on perks that have been acquired by a company or used by an employee.
- Corporate Tax: Corporate tax is paid by companies from the revenue they earn.

Indirect Tax

Indirect taxes are levied on goods or services. Some examples of Indirect Taxes are:

- Sales Tax: Sales Tax is levied on the sale of a product.
- **Service Tax:** Service Tax is added to services provided in India.
- Value Added Tax: Value Added Tax is levied at the discretion of the state government. The tax is levied on goods sold in the state. The tax amount is decided by the state.
- **Customs Duty & Octroi:** Customs Duty is a charge that is applied on purchases that are imported from another country. Octroi is levied on goods that cross state borders within India.
- Excise Duty: Excise Duty is levied on all goods manufactured or produced in India

Tips



- Think about how quickly you need your money back and pick an investment option accordingly.
- Ensure that you are buying the right type of insurance policy for yourself.
- Remember, not paying taxes can result in penalties ranging from fines to imprisonment.

-5.3.5 Online Banking, NEFT, RTGS etc.: What is Online Banking?

Internet or online banking allows account holders to access their account from a laptop at any location. In this way, instructions can be issued. To access an account, account holders simply

Internet banking can be used to:

- Find out an account balance
- Transfer amounts from one account to another
- Arrange for the issuance of cheques
- Instruct payments to be made

- Request for a cheque book
- Request for a statement of accounts
- Make a fixed deposit

Electronic Funds Transfers

Electronic funds transfer is a convenient way of transferring money from the comfort of one's own home, using integrated banking tools like internet and mobile banking.

Transferring funds via an electronic gateway is extremely convenient. With the help of online banking, you can choose to:

- Transfer funds into your own accounts of the same bank.
- Transfer funds into different accounts of the same bank.
- Transfer funds into accounts in different bank, using NEFT.
- Transfer funds into other bank accounts using RTGS.
- Transfer funds into various accounts using IMPS.

NEFT

NEFT stands for National Electronic Funds Transfer. This money transfer system allows you to electronically transfer funds from your respective bank accounts to any other account, either in the same bank or belonging to any other bank. NEFT can be used by individuals, firms and corporate organizations to transfer funds between accounts.

In order to transfer funds via NEFT, two things are required:

- A transferring bank
- A destination bank

Before you can transfer funds through NEFT, you will need to register the beneficiary who will be receiving the funds. In order to complete this registration, you will require the following information:

- Recipient's name
- Recipient's account number
- Recipient's bank's name
- Recipient's bank's IFSC code

RTGS

RTGS stands for Real Time Gross Settlement. This is a real-time fund transfer system which enables you to transfer funds from one bank to another, in real time or on a gross basis. The transferred amount is immediately deducted from the account of one bank, and instantly credited to the other bank's account. The RTGS payment gateway is maintained by the Reserve Bank of India. The transactions between banks are made electronically. RTGS can be used by individuals, companies and firms to transfer large sums of money. Before remitting funds through RTGS, you will need to add the beneficiary and his bank account details via your online banking account.

In order to complete this registration, you will require the

• Name of the beneficiary

• Beneficiary's account number

Beneficiary's bank address

• Beneficiary's bank's IFSC code

IMPS

IMPS stands for Immediate Payment Service. This is a real-time, inter-bank, electronic funds transfer system used to transfer money instantly within banks across India. IMPS enables users to make instant electronic transfer payments using mobile phones through both, Mobile Banking and SMS. It can also be used through ATMs and online banking. IMPS is available 24 hours a day and 7 days a week. The system features a secure transfer gateway and immediately confirms orders that have been fulfilled.

- Register for IMPS with your bank
- Receive a Mobile Money Identifier (MMID) from the bank
- Receive a MPIN from the bank

To transfer money through IMPS, the you need to:

Once you have both these, you can login or make a request through SMS to transfer a particular amount to a beneficiary.

For the beneficiary to receive the transferred money, he must:

- 1. Link his mobile number with his respective account
- 2. Receive the MMID from the bank

In order to initiate a money transfer through IMPS, you will need to enter the following information:

- 1. The beneficiary's mobile number
- 2. The beneficiary's MMID

3. The transfer amount

4. Your MPIN

As soon as money has been deducted from your account and credited into the beneficiary's account, you will be sent a confirmation SMS with a transaction reference number, for future reference.

Differences between NEFT, RTGS & IMPS

Criteria	NEFT	RTGS	IMPS
Settlement	Done in batches	Real-time	Real-time
Full form	National Electronic Fund Transfer	Real Time Gross Settlement	Immediate Payment Service
Timings on Monday – Friday	8:00 am – 6:30 pm	9:00 am – 4:30 pm	24x7
Timings on Saturday	8:00 am – 1:00 pm	9:00 am – 1:30 pm	24x7
Minimum amount of money transfer limit	₹1	₹2 lacs	₹1
Maximum amount of money transfer limit	₹10 lacs	₹10 lacs per day	₹2 lacs

Maximum	Up to 10,000 –	above 2 – 5	Up to 10,000
charges as per RBI	₹2.5	lacs ₹25	– ₹5
	above 10,000 – 1 lac - ₹5 above 1 – 2 lacs	above 5 – 10 lacs ₹50	above 10,000 – 1 lac – ₹5
	₹15		above 1 – 2
	above 2 – 5 lacs ₹25		lacs – ₹15
	above 5 – 10 lacs ₹25		

Fig 5.3.2 : Differences between NEFT, RTGS & IMPS

Tips L

- Never click on any links in any e-mail message to access your online banking website.
- You will never be asked for your credit or debit card details while using online banking.
- Change your online banking password regularly.

UNIT 5.4: Preparing for Employment & Self-Employment

Unit Objectives 6



At the end of this unit, you will be able to:

- 1. Discuss the steps to prepare for an interview
- 2. Discuss the steps to create an effective Resume
- 3. Discuss the most frequently asked interview questions
- 4. Discuss how to answer the most frequently asked interview questions
- 5. Discuss basic workplace terminology

5.4.1 Interview Preparation: How to Prepare for an Interview?

The success of your getting the job that you want depends largely on how well your interview for that job goes. Therefore, before you go in for your interview, it is important that you prepare for it with a fair amount of research and planning. Take a look at the steps to follow in order to be well prepared for an interview:

1. Research the organization that you are having the interview with.

- Studying the company beforehand will help you be more prepared at the time of the interview. Your knowledge of the organization will help you answer questions at the time of the interview, and will leave you looking and feeling more confident. This is sure to make you stand out from other, not as well informed, candidates.
- Look for background information on the company. Ty and find an overview of the company and its industry profile.
- Visit the company website to get a good idea of what the company does. A company website offers a wealth of important information. Read and understand the company's mission statement. Pay attention to the company's products/services and client list. Read through any press releases to get an idea of the company's projected growth and stability.
- Note down any questions that you have after your research has been completed.

2. Think about whether your skills and qualifications match the job requirements.

- Carefully read through and analyse the job description.
- Make a note of the knowledge, skills and abilities required to fulfil the job requirements.
- Take a look at the organization hierarchy. Figure out where the position you are applying for fits into this hierarchy.

3. Go through the most typical interview questions asked, and prepare your responses.

- Remember, in most interviews a mix of resume-based, behavioural and case study questions are asked.
- Think about the kind of answers you would like to provide to typical questions asked in these three areas.
- Practice these answers until you can express them confidently and clearly.

4. Plan your attire for the interview.

- It is always safest to opt for formal business attire, unless expressly informed to dress in business casual (in which case you should use your best judgement)
- Ensure that your clothes are clean and well-ironed. Pick neutral colours nothing too bright or flashy.
- The shoes you wear should match your clothes, and should be clean and suitable for a n interview.
- Remember, your aim is to leave everyone you meet with the impression that you are a professional and highly efficient person.

5. Ensure that you have packed everything that you may require during the interview.

- Carry a few copies of your resume. Use a good quality paper for your resume print outs.
- Always take along a notepad and a pen.
- Take along any information you may need to refer to, in order to fill out an application form.
- Carry a few samples of your work, if relevant.

6. Remember the importance of non-verbal communication.

- Practice projecting confidence. Remind yourself to smile and make eye contact. Practice giving a firm handshake.
- Keep in mind the importance of posture. Practice sitting up straight. Train yourself to stop nervous gestures like fidgeting and foot-tapping.
- Practice keeping your reactions in check. Remember, your facial expressions provide a good insight into your true feelings. Practice projecting a positive image.

7. Make a list of questions to end the interview with.

- Most interviews will end with the interviewer(s) asking if you have any questions.
 This is your chance to show that you have done your research and are interested in learning more about the company.
- If the interviewer does not ask you this question, you can inform him/her that you have some queries that you would like to discuss. This is the time for you to refer to the notes you made while studying the company.
- Some good questions to ask at this point are:
 - What do you consider the most important criteria for success in this job?
 - o How will my performance be evaluated?
 - O What are the opportunities for advancement?
 - O What are the next steps in the hiring process?
- Remember, never ask for information that is easily available on the company website.

Tips



- Ask insightful and probing questions.
- When communicating, use effective forms of body language like smiling, making eye contact, and actively listening and nodding. Don't slouch, play with nearby items, fidget, chew gum, or mumble.

5.4.2 Preparing an Effective Resume: How to Create an Effective Resume?

A resume is a formal document that lists a candidate's work experience, education and skills. A good resume gives a potential employer enough information to believe the applicant is worth interviewing. That's why it is so important to create a résumé that is effective. Take a look at the steps to create an effective resume:

Step 1: Write the Address Section

The Address section occupies the top of your resume. It includes information like your name, address, phone number and e-mail address. Insert a bold line under the section to separate it from rest of your resume.

Example:

Khyati Mehta

Breach Candy, Mumbai – India Contact No: +91 2223678270 Email: jasmine.watts@gmail.com

Step 2: Add the Profile Summary Section

This part of your resume should list your overall experiences, achievements, awards, certifications and strengths. You can make your summary as short as 2-3 bullet points or a s long as 8-10 bullet points.

Example:

Profile Summary

- A Floor Supervisor graduated from University of Delhi having 6 years of experience in managing a retail outlet.
- Core expertise lies in managing retail staff, including cashiers and people working on the floor.

Step 3: Include Your Educational Qualifications

When listing your academic records, first list your highest degree. Then add the second highest qualification under the highest one and so on. To provide a clear and accurate picture of your educational background, it is critical that include information on your position, rank, percentage or CPI for every degree or certification that you have listed.

If you have done any certifications and trainings, you can add a Trainings & Certifications section under your Educational Qualifications section.

Example:

Educational Qualifications

<Enter qualification> <enter date of qualification> from <enter name of institute> with
<enter percentage or any other relevant scoring system>.

Step 4: List Your Technical Skills

When listing your technical skills, start with the skills that you are most confident about. Then add the skills that you do not have as good a command over. It is perfectly acceptable to include just one skill, if you feel that particular skill adds tremendous value to your résumé. If you do not have any technical skills, you can omit this step.

Example:

Technical Skills

<Enter your technical skill here, if applicable>

Step 5: Insert Your Academic Project Experience

List down all the important projects that you have worked on. Include the following information in this section:

- Project title
 Organization
 Platform used
- Contribution
 Description

Example:

Academic Projects

Project Title: <*Insert project title*>

Organization: <*Insert the name of the organization for whom you did the project*>

Platform used: <Insert the platform used, if any>

Contribution: <*Insert your contribution towards this project>* **Description**: <*Insert a description of the project in one line>*

Step 6: List Your Strengths

This is where you list all your major strengths. This section should be in the form of a bulleted list.

Example:

Strengths

- Excellent oral, written and presentation skills
- Action-oriented and result-focused
- Great time management skills

Step 7: List Your Extracurricular Activities

It is very important to show that you have diverse interests and that your life consists of more than academics. Including your extracurricular activities can give you an added edge over other candidates who have similar academic scores and project experiences. This section should be in the form of a bulleted list.

Example:

< Insert your extracurricular activity here. E.g.: Member of, played		
(name of sport) at	level, won (name of prize/award) for	
>		

Step 8: Write Your Personal Details

The last section of your résumé must include the following personal information:

Date of birth

• Gender & marital status

Nationality

Languages known

Example:

Personal Details

Date of birth: 25th May, 1981

Gender & marital status: Female, Single

• Nationality: Indian

Tips



- Keep your resume file name short, simple and informational.
- Make sure the resume is neat and free from typing errors.
- Always create your resume on plain white paper.

5.4.3 Interview FAQs

Take a look at some of the most frequently asked interview questions, and some helpful tips on how to answer them.

Q1. Can you tell me a little about yourself?

Tips to answer:

- Don't provide your full employment or personal history.
- Offer 2-3 specific experiences that you feel are most valuable and relevant.
- Conclude with how those experiences have made you perfect for this specific role.

Q2. How did you hear about the position?

Tips to answer:

- Tell the interviewer how you heard about the job whether it was through a friend (name the friend), event or article (name them) or a job portal (say which one).
- Explain what excites you about the position and what in particular caught your eye about this role.

Q3. What do you know about the company?

Tips to answer:

- Don't recite the company's About Us page.
- Show that you understand and care about the company's goals.
- Explain why you believe in the company's mission and values.

Q4. Why do you want this job?

Tips to answer:

- Show that you are passionate about the job.
- Identify why the role is a great fit for you.
- Explain why you love the company.

Q5. Why should we hire you?

Tips to answer:

- Prove through your words that you can not only do the work, but can definitely deliver excellent results.
- Explain why you would be a great fit with the team and work culture.
- Explain why you should be chosen over any other candidate.

Q6. What are your greatest professional strengths?

Tips to answer:

- Be honest share some of your real strengths, rather than give answers that you think sound good.
- Offer examples of specific strengths that are relevant to the position you are applying for.
- Provide examples of how you've demonstrated these strengths.

Q7. What do you consider to be your weaknesses?

Tips to answer:

- The purpose of this question is to gauge your self-awareness and honesty.
- Give an example of a trait that you struggle with, but that you're working on to improve.

Q8. What are your salary requirements?

Tips to answer:

- Do your research beforehand and find out the typical salary range for the job you are applying for.
- Figure out where you lie on the pay scale based on your experience, education, and skills
- Be flexible. Tell the interviewer that you know your skills are valuable, but that you want the job and are willing to negotiate.

Q9. What do you like to do outside of work?

Tips to answer:

- The purpose of this question is to see if you will fit in with the company culture.
- Be honest open up and share activities and hobbies that interest and excite you.

Q10. If you were an animal, which one would you want to be?

Tips to answer:

- The purpose of this question is to see if you are able to think on your feet.
- There's no wrong answer but to make a great impression try to bring out your strengths or personality traits through your answer.

Q11: What do you think we could do better or differently?

Tips to answer:

- The purpose of this question is to see if you have done your research on the company, and to test whether you can think critically and come up with new ideas.
- Suggest new ideas. Show how your interests and expertise would help you execute these ideas.

Q12: Do you have any questions for us?

Tips to answer:

- Do not ask questions to which the answers can be easily found on the company website or through a quick online search.
- Ask intelligent questions that show your ability to think critically.

Tips



- Be honest and confident while answering.
- Use examples of your past experiences wherever possible to make your answers more impactful.

5.4.4 Work Readiness – Terms & Terminologies: Basic – Workplace Terminology

Every employee should be well versed in the following terms:

- Annual leave: Paid vacation leave given by employers to employees.
- **Background Check:** A method used by employers to verify the accuracy of the information provided by potential candidates.
- **Benefits:** A part of an employee's compensation package.
- **Breaks:** Short periods of rest taken by employees during working hours.
- **Compensation Package:** The combination of salary and benefits that an employer provides to his/her employees.
- Compensatory Time (Comp Time): Time off in lieu of pay.
- **Contract Employee:** An employee who works for one organization that sells said employee's service to another company, either on a project or time basis.
- **Contract of Employment:** When an employee is offered work in exchange for wages or salary, and accepts the offer made by the employer, a contract of employment exists.
- **Corporate Culture:** The beliefs and values shared by all the members of a company, and imparted from one generation of employees to another.
- **Counter Offer/Counter Proposal:** A negotiation technique used by potential candidates to increase the amount of salary offered by a company.
- **Cover Letter:** A letter that accompanies a candidate's resume. It emphasizes the important points in the candidate's resume and provides real examples that prove the candidate's ability to perform the expected job role.
- **Curriculum Vitae (CV)/Resume:** A summary of a candidate's achievements, educational work experience, skills and strengths.
- **Declining Letter:** A letter sent by an employee to an employer, turning down the job offer employer to the employee.
- **Deductions:** Amounts subtracted from an employee's pay and listed on the employee's pay slip.
- **Discrimination:** The act of treating one person not as favourably as another person.
- **Employee:** A person who works for another person in exchange for payment.
- **Employee Training:** A workshop or in-house training that an employee is asked to attend by his or her superior, for the benefit of the employer.
- **Employment Gaps:** Periods of unemployed time between jobs.
- **Fixed-Term Contract:** A contract of employment which gets terminated on an agreed-upon date.
- **Follow-Up:** The act of contacting a potential employer after a candidate has submitted his or her resume.
- Freelancer/Consultant/Independent Contractor: A person who works for him or herself for temporary jobs and projects with different employers.
- Holiday: Paid time-off from work.
- **Hourly Rate**: The amount of salary or wages paid for 60 minutes of work.

- **Internship**: A job opportunity offered by an employer to a potential employee, called an at the employer's company for a fixed, limited time period.
- **Interview**: A conversation between a potential employee and a representative of an order to determine if the potential employee should be hired.
- **Job Application**: A form which asks for a candidate's information like the candidate's name, details and work experience. The purpose of a candidate submitting a job application, is to show that candidate's interest in working for a particular company.
- **Job Offer**: An offer of employment made by an employer to a potential employee.
- **Job Search Agent**: A program that enables candidates to search for employment opportunities by selecting criteria listed in the program, for job vacancies. background, made by the and pitches intern, to work employer, in address, contact
- Lay Off: A lay off occurs when an employee is temporarily let go from his or her job, due to the employer not having any work for that employee.
- **Leave**: Formal permission given to an employee, by his or her employer, to take a leave of absence from work.
- Letter of Acceptance: A letter given by an employer to an employee, confirming the offer of employment made by the employer, as well as the conditions of the offer.
- Letter of Agreement: A letter that outlines the terms of employment.
- **Letter of Recommendation**: A letter written for the purpose of validating the work skills of a person.
- **Maternity Leave**: Leave taken from work by women who are pregnant, or who have just given birth.
- **Mentor**: A person who is employed at a higher level than you, who offers you advice and guides you in your career.
- Minimum wage: The minimum wage amount paid on an hourly basis.
- **Notice**: An announcement made by an employee or an employer, stating that the employment contract will end on a particular date.
- Offer of Employment: An offer made by an employer to a prospective employee that contains important information pertaining to the job being offered, like the starting date, salary, working conditions etc.
- **Open-Ended Contract**: A contract of employment that continues till the employer or terminates it.
- **Overqualified**: A person who is not suited for a particular job because he or she has too m any years of work experience, or a level of education that is much higher than required f or the job, or is currently or was previously too highly paid.
- Part-Time Worker: An employee who works for fewer hours than the standard number of hours normally worked.
- Paternity Leave: Leave granted to a man who has recently become a father.
- Recruiters/Head-hunters/Executive Search Firms: Professionals who are paid by employers to search for people to fill particular positions.
- **Resigning/Resignations**: When an employee formally informs his or her employer that he or she is quitting his or her job.
- **Self-Employed**: A person who has his or her own business and does not work in the capacity of an employee.
- **Time Sheet**: A form that is submitted to an employer, by an employee, that contains the number of hours worked every day by the employee.

UNIT 5.5: Understanding Entrepreneurship

Unit Objectives 6



At the end of this unit, you will be able to:

- 1. Discuss the concept of entrepreneurship
- 2. Discuss the importance of entrepreneurship
- 3. Describe the characteristics of an entrepreneur
- 4. Describe the different types of enterprises
- 5. List the qualities of an effective leader
- 6. Discuss the benefits of effective leadership
- 7. List the traits of an effective team
- 8. Discuss the importance of listening effectively
- 9. Discuss how to listen effectively
- 10. Discuss the importance of speaking effectively
- 11. Discuss how to speak effectively
- 12. Discuss how to solve problems
- 13. List important problem solving traits
- 14. Discuss ways to assess problem solving skills
- 15. Discuss the importance of negotiation
- 16. Discuss how to negotiate
- 17. Discuss how to identify new business opportunities
- 18. Discuss how to identify business opportunities within your business
- 19. Explain the meaning of entrepreneur
- 20. Describe the different types of entrepreneurs
- 21. List the characteristics of entrepreneurs
- 22. Recall entrepreneur success stories
- 23. Discuss the entrepreneurial process
- 24. Describe the entrepreneurship ecosystem
- 25. Discuss the purpose of the Make in India campaign
- 26. Discuss key schemes to promote entrepreneurs
- 27. Discuss the relationship between entrepreneurship and risk appetite
- 28. Discuss the relationship between entrepreneurship and resilience
- 29. Describe the characteristics of a resilient entrepreneur
- 30. Discuss how to deal with failure

5.5.1 Concept Introduction (Characteristic of Entrepreneur, types of firms / types of enterprises)

Entrepreneurs and Entrepreneurship

Anyone who is determined to start a business, no matter what the risk, is an entrepreneur. Entrepreneurs run their own start-up, take responsibility for the financial risks and use creativity, innovation and vast reserves of self-motivation to achieve success. They dream big and are determined to do whatever it takes to turn their idea into a viable offering. The aim of a n entrepreneur is to create an enterprise. The process of creating this enterprise is known as entrepreneurship.

Importance of Entrepreneurship

- 1. Entrepreneurship is very important for the following reasons:
- 2. It results in the creation of new organizations
- 3. It brings creativity into the marketplace
- 4. It leads to improved standards of living
- 5. It helps develop the economy of a country

Characteristics of Entrepreneurs

All successful entrepreneurs have certain characteristics in common.

They are all:

Extremely passionate about their work

Confident in themselves

Disciplined and dedicated

Motivated and driven

Highly creative

Visionaries

Open-minded

Decisive

Entrepreneurs also have a tendency to:

Have a high-risk tolerance

• Thoroughly plan everything

Manage their money wisely

• Make their customers their priority

Understand their offering and their market in detail

Ask for advice from experts when required

Know when to cut their losses

Examples of Famous Entrepreneurs

Some famous entrepreneurs are:

- Dhirubhai Ambani (Reliance)
- Dr. Karsanbhai Patel (Nirma)
- Azim Premji (Wipro)
- Anil Agarwal (Vedanta Resources)

Types of Enterprises

As an entrepreneur in India, you can own and run any of the following types of enterprises:

Sole Proprietorship

In a sole proprietorship, a single individual owns, manages and controls the enterprise. This type of business is the easiest to form with respect to legal formalities. The business and the owner have no separate legal existence. All profit belongs to the proprietor, as do all the losses the liability of the entrepreneur is unlimited.

Partnership

A partnership firm is formed by two or more people. The owners of the enterprise are called partners. A partnership deed must be signed by all the partners. The firm and its partners have no separate legal existence. The profits are shared by the partners. With respect to losses, the liability of the partners is unlimited. A firm has a limited life span and must be dissolved when any one of the partners dies, retires, claims bankruptcy or goes insane.

Limited Liability Partnership (LLP)

In a Limited Liability Partnership or LLP, the partners of the firm enjoy perpetual existence as well as the advantage of limited liability. Each partner's liability is limited to their agreed contribution to the LLP. The partnership and its partners have a separate legal existence.

Tips



- Learn from others' failures.
- Be certain that this is what you want.
- Search for a problem to solve, rather than look for a problem to attach to your idea.

5.5.2 Leadership & Teamwork: Leadership and Leaders

Leadership means setting an example for others to follow. Setting a good example means not asking someone to do something that you wouldn't willingly want to do yourself. Leadership is about figuring out what to do in order to win as a team, and as a company. Leaders believe in doing the right things. They also believe in helping others to do the right things. An effective leader is someone who:

- Creates an inspiring vision of the future.
- Motivates and inspires his team to pursue that vision.

Leadership Qualities That All Entrepreneurs Need

Building a successful enterprise is only possible if the entrepreneur in charge possesses excellent leadership qualities. Some critical leadership skills that every entrepreneur must have are:

- 1. **Pragmatism:** This means having the ability to highlight all obstacles and challenges, in order to resolve issues and reduce risks.
- 2. **Humility:** This means admitting to mistakes often and early, and being quick to take responsibility for your actions. Mistakes should be viewed as challenges to overcome, not opportunities to point blame.
- 3. **Flexibility:** It is critical for a good leader to be very flexible and quickly adapt to change. It is equally critical to know when to adapt and when not to.
- 4. **Authenticity:** This means showing both, your strengths and your weaknesses. It means being human and showing others that you are human.
- 5. **Reinvention:** This means refreshing or changing your leadership style when necessary. To do this, it's important to learn where your leadership gaps lie and find out what resources are required to close them.
- 6. **Awareness:** This means taking the time to recognize how others view you. It means understanding how your presence affects those around you.

Benefits of Effective Leadership

Effective leadership results in numerous benefits. Great leadership leads to the leader successfully:

- Gaining the loyalty and commitment of the team members
- Motivating the team to work towards achieving the company's goals and objectives
- Building morale and instilling confidence in the team members
- Fostering mutual understanding and team-spirit among team members
- Convincing team members about the need to change when a situation requires adaptability

Teamwork and Teams

Teamwork occurs when the people in a workplace combine their individual skills to pursue a common goal. Effective teams are made up of individuals who work together to achieve this common goal. A great team is one who holds themselves accountable for the end result.

- 1. **Unity of purpose:** All the team members should clearly understand and be equally committed to the purpose, vision and goals of the team.
- 2. **Great communication skills:** Team members should have the ability to express their concerns, ask questions and use diagrams, and charts to convey complex information.
- 3. **The ability to collaborate:** Every member should feel entitled to provide regular feedback on new ideas.
- 4. **Initiative:** The team should consist of proactive individuals. The members should have the enthusiasm to come up with new ideas, improve existing ideas, and conduct their own research.

- 5. **Visionary members:** The team should have the ability to anticipate problems and act on these potential problems before they turn into real problems.
- 6. **Great adaptability skills:** The team must believe that change is a positive force. Change should be seen as the chance to improve and try new things.
- 7. **Excellent organizational skills:** The team should have the ability to develop standard work processes, balance responsibilities, properly plan projects, and set in place methods to measure progress and ROI.

Tips



- Don't get too attached to your original idea. Allow it to evolve and change.
- Be aware of your weaknesses and build a team that will complement your shortfalls.
- Hiring the right people is not enough. You need to promote or incentivize your most
- Talented people to keep them motivated.
- Earn your team's respect.

5.5.3 Communication Skills: Listening & Speaking the Importance of Listening Effectively

Listening is the ability to correctly receive and understand messages during the process of communication. Listening is critical for effective communication. Without effective listening skills, messages can easily be misunderstood. This results in a communication breakdown and can lead to the sender and the receiver of the message becoming frustrated or irritated. It's very important to note that listening is not the same as hearing. Hearing just refers to sounds that you hear. Listening is a whole lot more than that. To listen, one requires focus. It means not only paying attention to the story, but also focusing on how the story is relayed, the way language and voice is used, and even how the speaker uses their body language. The ability to listen depends on how effectively one can perceive and understand both, verbal and non-verbal cues.

How to Listen Effectively?

To listen effectively you should:

- Stop talking
- Stop interrupting
- Focus completely on what is being said
- Pay attention to the tone that is being used
- Pay attention to the speaker's gestures, facial expressions and eye movements
- Not try and rush the person

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- Nod and use encouraging words and gestures
- Not let the speaker's mannerisms or habits irritate or distract you

- Be open-minded
- Think about the speaker's perspective
- Be very, very patient

The Importance of Speaking Effectively

How successfully a message gets conveyed depends entirely on how effectively you are able to get it through. An effective speaker is one who enunciates properly, pronounces words correctly, chooses the right words and speaks at a pace that is easily understandable.

Besides this, the words spoken out loud need to match the gestures, tone and body language used. What you say, and the tone in which you say it, results in numerous perceptions being formed. A person who speaks hesitantly may be perceived as having low self-esteem or lacking in knowledge of the discussed topic. Those with a quiet voice may very well be labelled as shy. And those who speak in commanding tones with high levels of clarity, are usually considered to be extremely confident. This makes speaking a very critical communication skill.

How to Speak Effectively?

To speak effectively you should:

- Incorporate body language in your speech like eye contact, smiling, nodding, gesturing etc.
- Build a draft of your speech before actually making your speech.
- Ensure that all your emotions and feelings are under control.
- Pronounce your words distinctly with the correct pitch and intensity. Your speech should be crystal clear at all times. Use a pleasant and natural tone when speaking. Your audience should not feel like you are putting on an accent or being unnatural in any way.
- Use precise and specific words to drive your message home. Ambiguity should be avoided at all costs.
- Ensure that your speech has a logical flow.
- Be brief. Don't add any unnecessary information.
- Make a conscious effort to avoid irritating mannerisms like fidgeting, twitching etc.
- Choose your words carefully and use simple words that the majority of the audience will have no difficulty understanding.
- Use visual aids like slides or a whiteboard.
- Speak slowly so that your audience can easily understand what you're saying. However, be careful not to speak too slowly because this can come across as stiff, unprepared or even condescending.
- Remember to pause at the right moments.



- If you're finding it difficult to focus on what someone is saying, try repeating their words in your head.
- Always maintain eye contact with the person that you are communicating with, when speaking as well as listening. This conveys and also encourages interest in the conversation.

5.5.4 Problem Solving & Negotiation Skills: What is a **Problem?**

As per The Concise Oxford Dictionary (1995), a problem is, "A doubtful or difficult matter requiring a solution"

All problems contain two elements:

- 1. Goals
- 2. Obstacles

The aim of problem solving is to recognize the obstacles and remove them in order to achieve the goals.

How to Solve Problems?



Solving a problem requires a level of rational thinking. Here are some logical steps to follow when faced with an issue:

Step 1: Identify the problem Step 2: Study the problem in detail

Step 3: List all possible solutions **Step 4:** Select the best solution

Step 5: Implement the chosen solution **Step 6:** Check that the problem has really been solved

Important Traits for Problem Solving

Highly developed problem-solving skills are critical for both, business owners and their employees. The following personality traits play a big role in how effectively problems are solved:

- Being open minded
- Asking the right questions
- Being proactive

- Not panicking
- Having a positive attitude
- Focusing on the right problem

How to Assess for Problem Solving Skills?

As an entrepreneur, it would be a good idea to assess the level of problem solving skills of potential candidates before hiring them. Some ways to assess this skill are through:

1. Application forms: Ask for proof of the candidate's problem solving skills in the application form.

- 2. Psychometric tests: Give potential candidates logical reasoning and critical thinking tests and see how they fare.
- 3. Interviews: Create hypothetical problematic situations or raise ethical questions and see how the candidates respond.
- 4. Technical questions: Give candidates examples of real life problems and evaluate their thought process.

What is Negotiation?

Negotiation is a method used to settle differences. The aim of negotiation is to resolve differences through a compromise or agreement while avoiding disputes. Without negotiation, conflicts are likely to lead to resentment between people. Good negotiation skills help satisfy both parties and go a long way towards developing strong relationships.

Why Negotiate?

Starting a business requires many, many negotiations. Some negotiations are small while others are critical enough to make or break a start-up. Negotiation also plays a big role inside the workplace. As an entrepreneur, you need to know not only know how to negotiate yourself, but also how to train employees in the art of negotiation.

How to Negotiate?



Take a look at some steps to help you negotiate:

Step 1: Pre- Negotiation	Agree on where to meet to discuss the problem, decide who all will be present and set a time limit for
Preparation	the discussion.
Step 2: Discuss the problem	This involves asking questions, listening to the other side, puttingyour views forward and clarifying doubts.
Step 3: Clarify the Objective	Ensure that both parties want to solve the same problem and reach the same goal.
Step 4: Aim for a Win- Win Outcome	Try your best to be open minded when negotiating. Compromise and offer alternate solutions to reach an outcome where both parties win.
Step 5: Clearly Define the Agreement	When an agreement has been reached, the details of the agreement should be crystal clear to both sides, with no scope for misunderstandings.
Step 6: Implement the Agreed Upon Solution	Agree on a course of action to set the solution in motion



- Know exactly what you want before you work towards getting it
- Give more importance to listening and thinking, than speaking
- Focus on building a relationship rather than winning
- Remember that your people skills will affect the outcome
- Know when to walk away sometimes reaching an agreement may not be possible

5.5.5 Business Opportunities Identification: Entrepreneurs and Opportunities

"The entrepreneur always searches for change, responds to it and exploits it as an opportunity."

Peter Drucker

The ability to identify business opportunities is an essential characteristic of an entrepreneur.

What is an Opportunity?

The word opportunity suggests a good chance or a favourable situation to do something offered by circumstances.

Common Questions Faced by Entrepreneurs

A critical question that all entrepreneurs face is how to go about finding the business opportunity that is right for them.

- Some common questions that entrepreneurs constantly think about are:
- Should the new enterprise introduce a new product or service based on an unmet need?
- Should the new enterprise select an existing product or service from one market and offer it in another where it may not be available?
- Should the enterprise be based on a tried and tested formula that has worked elsewhere?

It is therefore extremely important that entrepreneurs must learn how to identify new and existing business opportunities and evaluate their chances of success.

When is an Idea an Opportunity?

An idea is an opportunity when:

- It creates or adds value to a customer
- It solves a significant problem, removes a pain point or meets a demand
- Has a robust market and profit margin
- Is a good fit with the founder and management team at the right time and place

Factors to Consider When Looking for Opportunities

Consider the following when looking for business opportunities:

Economic trends

Market trends

- Changes in funding
- Changing relationships between vendors, partners and suppliers
- Changes in political support
- Shift in target audience

Ways to Identify New Business Opportunities

1. Identify Market Inefficiencies

When looking at a market, consider what inefficiencies are present in the market. Think about ways to correct these inefficiencies.

2. Remove Key Hassles

Rather than create a new product or service, you can innovatively improve a product, service or process.

3. Create Something New

Think about how you can create a new experience for customers, based on existing business models.

4. Pick a Growing Sector/Industry

Research and find out which sectors or industries are growing and think about what opportunities you can tap in the same.

5. Think About Product Differentiation

If you already have a product in mind, think about ways to set it apart from the existing ones.

Ways to Identify Business Opportunities within Your Business

1. SWOT Analysis

An excellent way to identify opportunities inside your business is by creating a SWOT analysis. The acronym SWOT stands for strengths, weaknesses, opportunities, and threats. SWOT analysis framework:

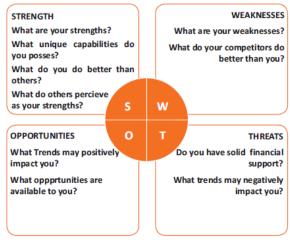


Fig.5.5.1. SWOT Analysis

Consider the following when looking for business opportunities:

By looking at yourself and your competitors using the SWOT framework, you can uncover opportunities that you can exploit, as well as manage and eliminate threats that could derail your success.

2. Establishing Your USP

Establish your USP and position yourself as different from your competitors. Identify why customers should buy from you and promote that reason.

Opportunity Analysis

Once you have identified an opportunity, you need to analyse it.

To analyse an opportunity, you must:

- Remember, opportunities are situational.
- Avoid the latest craze.
- Look for a proven track record.
- Love your idea.

5.5.6 Entrepreneurship Support Eco-System: Who is an Entrepreneur?

An entrepreneur is a person who:

- Does not work for an employee
- Runs a small enterprise
- Assumes all the risks and rewards of the enterprise, idea, good or service

Types of Entrepreneurs

There are four main types of entrepreneurs:

- 1. The Traditional Entrepreneur: This type of entrepreneur usually has some kind of skill they can be a carpenter, mechanic, cook etc. They have businesses that have been around for numerous years like restaurants, shops and carpenters. Typically, they gain plenty of experience in a particular industry before they begin their own business in a similar field.
- 2. **The Growth Potential Entrepreneur:** The desire of this type of entrepreneur is to start an enterprise that will grow, win many customers and make lots of money. Their ultimate aim is to eventually sell their enterprise for a nice profit. Such entrepreneurs usually have a science or technical background.
- 3. **The Project-Oriented Entrepreneur:** This type of entrepreneur generally has a background in the Arts or psychology. Their enterprises tend to be focus on something that they are very passionate about.
- 4. **The Lifestyle Entrepreneur:** This type of entrepreneur has usually worked as a teacher or a secretary. They are more interested in selling something that people will enjoy, rather than making lots of money.

Characteristics of an Entrepreneur

Successful entrepreneurs have the following characteristics:

- They are highly motivated
- They are creative and persuasive
- They are mentally prepared to handle each and every task
- They have excellent business skills they know how to evaluate their cash flow, sales and revenue
- They are willing to take great risks
- They are very proactive this means they are willing to do the work themselves, rather than wait for someone else to do it
- They have a vision they are able to see the big picture
- They are flexible and open-minded
- They are good at making decisions

Entrepreneur Success Stories

Dhiru Bhai Ambani

Dhirubhai Ambani began his entrepreneurial career by selling "bhajias" to pilgrims in Mount Girnar on weekends. At 16, he moved to Yemen where he worked as a gas-station attendant, and as a clerk in an oil company. He returned to India with Rs. 50,000 and started a textile trading company. Reliance went on to become the first Indian company to raise money in global markets and the first Indian company to feature in Forbes 500 list.

Dr. Karsanbhai Patel

Karsanbhai Patel made detergent powder in the backyard of his house. He sold his product door-to door and offered a money back guarantee with every pack that was sold. He charged Rs.3 per kg when the cheapest detergent at that time was Rs.13 per kg. Dr. Patel eventually started Nirma which became a whole new segment in the Indian domestic detergent market.

The Entrepreneurial Process



Let's take a look at the stages of the entrepreneurial process.

Stage 1: Idea Generation. The entrepreneurial process begins with an idea that has been thought of by the entrepreneur. The idea is a problem that has the potential to be solved.

Stage 2: Germination or Recognition. In this stage a possible solution to the identified problem is thought of.

Stage 3: Preparation or Rationalization. The problem is studied further and research is done to find out how others have tried to solve the same problem.

Stage 4: Incubation or Fantasizing. This stage involves creative thinking for the purpose of coming up with more ideas. Less thought is given to the problem areas.

Stage 5: Feasibility Study: The next step is the creation of a feasibility study to determine if the idea will make a profit and if it should be seen through.

Stage 6: Illumination or Realization. This is when all uncertain areas suddenly become clear. The entrepreneur feels confident that his idea has merit.

Stage 7: Verification or Validation. In this final stage, the idea is verified to see if it works and if it is useful.

Take a look at the diagram below to get a better idea of this process.

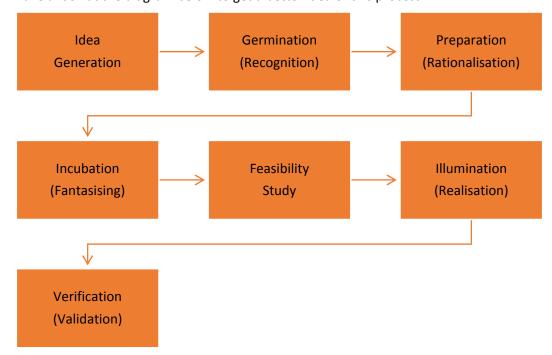


Fig.5.5.2. Entrepreneurship process

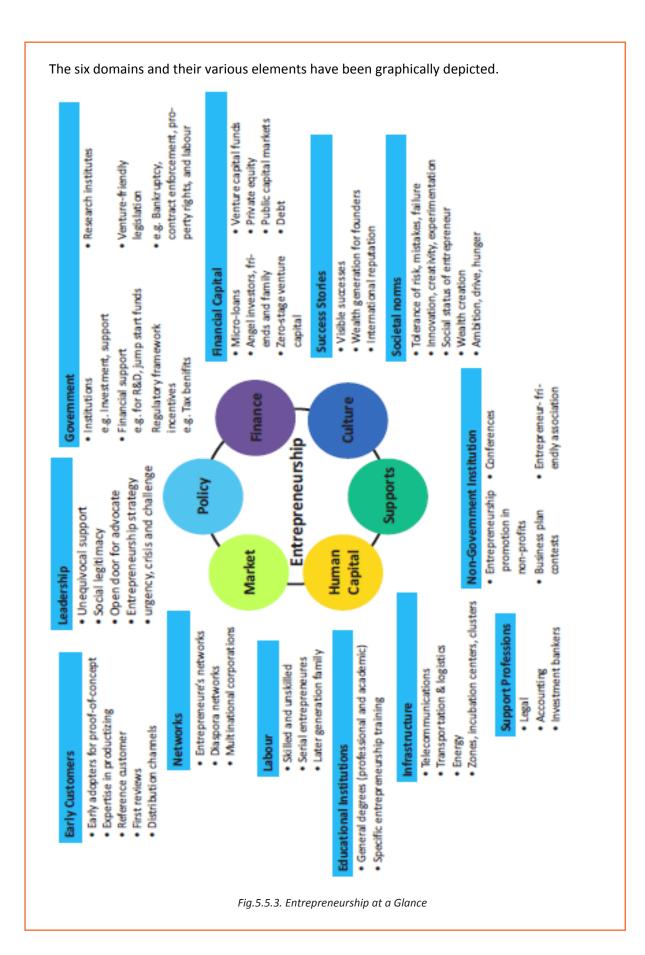
Introduction to the Entrepreneurship Ecosystem

The entrepreneurship support ecosystem signifies the collective and complete nature of entrepreneurship. New companies emerge and flourish not only because of the courageous, visionary entrepreneurs who launch them, but they thrive as they are set in an environment or 'ecosystem' made of private and public participants. These players nurture and sustain

the new ventures, facilitating the entrepreneurs' efforts. An entrepreneurship ecosystem comprises of the following six domains:

- 1. **Favourable Culture:** This includes elements such as tolerance of risk and errors, valuable networking and positive social standing of the entrepreneur.
- 2. **Facilitating Policies & Leadership:** This includes regulatory framework incentives and existence of public research institutes.
- 3. **Financing Options:** Angel financing, venture capitalists and micro loans would be good examples of this.
- 4. **Human Capital:** This refers to trained and untrained labour, entrepreneurs and entrepreneurship training programmes, etc.
- 5. **Conducive Markets for Products & Services:** This refers to an existence or scope of existence of a market for the product/service.
- 6. **Institutional & Infrastructural Support:** This includes legal and financing advisers, telecommunications, digital and transportation infrastructure, and entrepreneurship networking programmes.

These domains indicate whether there is a strong entrepreneurship support ecosystem and what actions should the government put in place to further encourage this ecosystem.



Every entrepreneurship support ecosystem is unique and all the elements of the ecosystem are interdependent. Although every region's entrepreneurship ecosystem can be broadly described by the above features, each ecosystem is the result of the hundred elements interacting in highly complex and particular ways.

Entrepreneurship ecosystems eventually become (largely) self-sustaining. When the six domains are resilient enough, they are mutually beneficial. At this point, government involvement can and should be significantly minimized. Public leaders do not need to invest a lot to sustain the ecosystem. It is imperative that the entrepreneurship ecosystem incentives are formulated to be self-liquidating, hence focussing on sustain ability of the environment.

Make in India Campaign

Every entrepreneur has certain needs. Some of their important needs are:

- To easily get loans
- To easily find investors
- To get tax exemptions
- To easily access resources and good infrastructure
- To enjoy a procedure that is free of hassles and is quick
- To be able to easily partner with other firms

The Make in India campaign, launched by Prime Minister Modi aims to satisfy all these needs of young, aspiring entrepreneurs. Its objective is to:

- Make investment easy
- Support new ideas
- Enhance skill development
- Safeguard the ideas of entrepreneurs
- Create state-of-the-art facilities for manufacturing goods

Key Schemes to Promote Entrepreneurs

The government offers many schemes to support entrepreneurs. These schemes are run by various Ministries/Departments of Government of India to support First Generation Entrepreneurs. Take a look at a few key schemes to promote entrepreneurship:

SI. Name of the Scheme

- 1. Pradhan Mantri MUDRA Yojana Micro Units Development and Refinance Agency (MUDRA),
- 2. STAND UP INDIA
- 3. Prime Minister Employment Generation Programme (PMEGP)
- 4. International Cooperation
- 5. Performance and Credit Rating
- 6. Marketing Assistance Scheme
- 7. Reimbursement of Registration Fee for Bar Coding
- 8. Enable Participation of MSMEs in State/District level Trade Fairs and Provide Funding Support
- 9. Capital Subsidy Support on Credit for Technology up gradation
- 10. Credit Guarantee Fund for Micro and Small Enterprise (CGFMSE)

- 11. Reimbursement of Certification Fees for Acquiring ISO Standards
- 12. Agricultural Marketing
- 13. Small Agricultural Marketing
- 14. Mega Food Park
- 15. Adivasi Mahila Sashaktikaran Yojana
- **1. Pradhan Mantri MUDRA Yojana**, Micro Units Development and Refinance Agency (MUDRA),

Description

Under the aegis support of Pradhan Mantra MUDRA Yojana, MUDRA has already created its initial products/schemes. The interventions have been named 'Shisha', 'Kishore' and 'Taren' to signify the stage of growth/development and funding needs of the beneficiary micro unit/entrepreneur and also provide a reference point for the next phase of graduation/growth to look forward to:

- a. Shisha: Covering loans up to Rs. 50,000/-
- b. Kishor: Covering loans above Rs. 50,000/- and up to Rs.5 lakh
- c. Tarun: Covering loans above Rs. 5 lakh to Rs.10 lakh

Who can apply?

Any Indian citizen who has a business plan for a non-farm sector income generating activity such as manufacturing, processing, trading or service sector and whose credit need is less than Rs.10 lakh can approach either a Bank, MFI, or NBFC for availing of MUDRA loans under Pradhan Mantri Mudra Yojana (PMMY).

2. Stand Up India

Description

The objective of the Standup India scheme is to facilitate bank loans between Rs.10 lakh and Rs.1 crore to at least one Schedule Caste (SC) or Scheduled Tribe (ST) borrower and at least one woman borrower per bank branch for setting up a Greenfield enterprise. This enterprise may be in manufacturing, services or the trading sector. In case of non-Individual enterprises at least 51% of the shareholding and controlling stake should be held be either an SC/ST or Woman Entrepreneur.

Who can apply?

ST, SC &Women

3. Prime Minister Employment Generation Programme (PMEGP)

Description

The Scheme is implemented by Khadi and Village Industries Commission (KVIC), as the nodal agency at the National level. At the State level, the Scheme is implemented through State KVIC Directorates, State Khadi and Village Industries Boards (KVIBs) and District Industries Centres (DICs) and banks. The Government subsidy under the Scheme is routed by KVIC through identified banks for eventual distribution to the beneficiaries/entrepreneurs in their bank accounts.

Nature of assistance

The maximum cost of the project/unit admissible under manufacturing sector is Rs.25 lakh and under business/service sector is Rs.10 lakh. Levels of funding under PMEGP

Categories of beneficiaries under PMEGP	Beneficiary's contribution	Rate of Subsidy of project cost)
	of project cost)	
rea (location of project/unit)		rban Rural
eneral Category	0%	15%
		5%
pecial (including SC / ST / OBC /	5%	25%
Minorities / Women, Ex- servicemen,		35%
hysically handicapped, NER, Hill and Border		
reas, etc.		

The balance amount of the total project cost will be provided by Banks as term loan as well as working capital.

Who can apply?

Any individual, above 18 years of age. At least VIII standard pass for projects costing above Rs.10 lakh in the manufacturing sector and above Rs.5 lakh in the business/service sector. Only new projects are considered for sanction under PMEGP. Self Help Groups (including those belonging to BPL provided that they have not availed benefits under any other Scheme), Institutions registered under Societies Registration Act,1860; Production Cooperative Societies, and Charitable Trusts are also eligible. Existing Units (under PMRY, REGP or any other scheme of Government of India or State Government) and the units that have already availed Government Subsidy under any other scheme of Government of India or State Government are NOT eligible.

4. International Cooperation

Description

The Scheme would cover the following activities:

- a. Deputation of MSME business delegations to other countries for exploring new areas of technology infusion/upgradation, facilitating joint ventures, improving market of MSMEs products, foreign collaborations, etc.
- b. Participation by Indian MSMEs in international exhibitions, trade fairs and buyer-seller meets in foreign countries as well as in India, in which there is international participation.
- c. Holding international conferences and seminars on topics and themes of interest to the MSME.

Nature of assistance

IC Scheme provides financial assistance towards the airfare and space rent of entrepreneurs. Assistance is provided on the basis of size and the type of the enterprise.

Who can apply?

- a. State/Central Government Organisations;
- b. Industry/Enterprise Associations; and
- c. Registered Societies/Trusts and Organisations associated with the promotion and development of MSMEs

5. Performance and Credit Rating for Micro and Small Enterprises

Description

The objective of the Scheme is to create awareness amongst micro & small enterprises about the strengths and weaknesses of their operations and also their credit worthiness.

Turn Over	Fee to be reimbursed by Ministry of MSME
Up to Rs.50 lacs	75% of the fee charged by the rating agency subject to a ceiling Rs. 15,000/-
Above Rs.50 lacs to Rs.200 Lacs	75% of the fee charged by the rating agency subject to a ceiling of Rs.30,0001-
Above Rs.200 lacs	75% of the fee charged by the rating agency subject

Nature of assistance

Who can apply?

Any enterprise registered in India as a micro or small enterprise is eligible to apply.

6. Marketing Assistance Scheme

Description

The assistance is provided for the following activities:

- a. Organizing exhibitions abroad and participation in international exhibitions/trade fairs
- b. Co-sponsoring of exhibitions organized by other organisations/industry associations/agencies
- c. Organizing buyer-seller meets, intensive campaigns and marketing promotion events

Nature of assistance

Financial assistance of up to 95% of the airfare and space rent of entrepreneurs. Assistance is provided on the basis of size and the type of the enterprise. Financial assistance for cosponsoring would be limited to 40% of the net expenditure, subject to maximum amount of Rs.5 lakh.

Who can apply?

MSMEs, Industry Associations and other organizations related to MSME sector.

7. Reimbursement of Registration Fee for Bar Coding Description

The financial assistance is provided towards 75% reimbursement of only one-time registration fee and 75% of annual recurring fee for first three years paid by MSEs to GS1 India for using bar coding.

Nature of assistance

Funding support for reimbursement of 75% of one time and recurring bar code registration fees.

Who can apply?

All MSMEs with EM registration.

8. Enabling Participation of MSMEs in State/District Level Trade Fairs and Provide Funding Support

Description

Provide marketing platform to manufacturing MSMEs by enabling their participation in state/district level exhibitions being organized by state/district authorities/associations.

Nature of assistance

1. Free registration for participating in trade fairs

Note: The selection of participants would be done by the MSME-DIs post the submission of application.

- 2. Reimbursement of 50% of to and fro actual fare by shortest distance/direct train (limited to AC II tier class) from the nearest railway station/bus fare to the place of exhibition and 50% space rental charges for MSMEs (General category entrepreneurs).
- 3. For Women/SC/ST entrepreneurs & entrepreneurs from North Eastern Region Govt. of India will reimburse 80% of items listed above in Point (2).

Note: The total reimbursement will be max. Rs. 30,000/- per unit for the SC/ST/Women/Physically Handicapped entrepreneurs, while for the other units the max. limit will be Rs. 20,000/- per person per MSME unit.

Note: The participant is required to submit follow-up proofs post attending the event to claim reimbursement. The proofs can be submitted after logging in online under the section "My Applications" or directly contacting a DI office.

Who can apply?

All MSMEs with EM registration.

9. Capital Subsidy Support on Credit for Technology Upgradation

Description

MSMEs can get a capital subsidy (~15%) on credit availed for technology upgradation.

Nature of assistance

Financial assistance for availing credit and loan.

Who can apply?

1. Banks and financial institutions can apply to DC-MSME for availing support.

2. MSMEs need to directly contact the respective banks for getting credit and capital subsidy.

How to apply?

If you are a financial institution, click on the "Apply Now" button or else you can also directly contact the Office of DC-MSME. You can view the contact details of Office of DC-MSME. If you are an MSME, directly contact the respective banks/financial institutions as listed in the scheme guidelines.

10. Provision of Collateral Free Credit for MSMEs

Description

Banks and financial institutions are provided funding assistance under this scheme so that they can in turn lend collateral free credit to MSMEs.

Nature of assistance

Funding support to banks and financial institutions for lending collateral-free credit to MSMEs.

Who can apply?

Banks and financial institutions can apply to office of DC-MSME/MSME-DIs for availing support. MSMEs need to directly contact the respective banks for getting credit.

11. Reimbursement of certification fees for acquiring ISO standards

ISO 9000/ISO 14001 Certification Reimbursement.

Description

The GoI assistance will be provided for one-time reimbursement of expenditure to such MSME manufacturing units which acquire ISO 18000/ISO 22000/ISO 27000 certification.

Nature of assistance

Reimbursement of expenditure incurred on acquiring ISO standards.

Who can apply?

MSMEs with EM registration.

12. Agricultural Marketing

Description

A capital investment subsidy for construction/renovation of rural godowns . Creation of scientific storage capacity and prevention of distress sale.

Nature of assistance

Subsidy @ 25% to farmers, 15% of project cost to companies.

Who can apply?

NGOs, SHGs, companies, co-operatives.

13. Small Agricultural Marketing

Description

Business development description provides venture capital assistance in the form of equity, and arranges training and visits of agri-preneurs.

Farmers' Agriculture Business Consortium

Business development description provides venture capital assistance in the form of equity, and arranges training and visits of agri-preneurs.

Nature of assistance

Financial assistance with a ceiling of Rs.5 lakh.

Who can apply?

Individuals, farmers, producer groups, partnership/propriety firms, SGHs, agri-preneurs, etc.

14. Mega Food Park

Description

Mechanism to link agricultural production and market to maximize value addition, enhance farmer's income, create rural employment.

Nature of assistance

One-time capital grant of 50% of project cost with a limit of Rs.50 crore.

Who can apply?

Farmers, farmer groups, SHGs.

15. Adivasi Mahila Sashaktikaran Yojana

Description

Concessional scheme for the economic development of ST women.

Nature of assistance

Term loan at concessional rates up to 90% of cost of scheme.

Who can apply?

Scheduled Tribes Women.

Tips



- Research the existing market, network with other entrepreneurs, venture capitalists, angel investors, and thoroughly review the policies in place to enable your entrepreneurship.
- Failure is a stepping stone and not the end of the road. Review yours and your peers' errors and correct them in your future venture.
- Be proactive in your ecosystem. Identify the key features of your ecosystem and enrich them to ensure self-sustainability of your entrepreneurship support ecosystem.

5.5.7 Risk Appetite & Resilience: Entrepreneurship and Risk

Entrepreneurs are inherently risk takers. They are path-makers not path-takers. Unlike a normal, cautious person, an entrepreneur would not think twice about quitting his job (his sole income) and taking a risk on himself and his idea.

An entrepreneur is aware that while pursuing his dreams, assumptions can be proven wrong and unforeseen events may arise. He knows that after dealing with numerous problems, success is still not guaranteed. Entrepreneurship is synonymous with the ability to take risks. This ability, called risk-appetite, is an entrepreneurial trait that is partly genetic and partly acquired.

What is Risk Appetite?

Risk appetite is defined as the extent to which a company is equipped to take risk, in order to achieve its objectives. Essentially, it refers to the balance, struck by the company, between possible profits and the hazards caused by changes in the environment (economic ecosystem, policies, etc.). Taking on more risk may lead to higher rewards but have a high probability of losses as well. However, being too conservative may go against the company as it can miss out on good opportunities to grow and reach their objectives. The levels of risk appetite can be broadly categorized as "low", "medium" and "high." The company's entrepreneur(s) have to evaluate all potential alternatives and select the option most likely to succeed. Companies have varying levels of risk appetites for different objectives.

The levels depend on:

- The type of industry
- Market pressures
- Company objectives

For example, a start-up with a revolutionary concept will have a very high risk appetite. The start-up can afford short term failures before it achieves longer term success. This type of appetite will not remain constant and will be adjusted to account for the present circumstances of the company.

Risk Appetite Statement

Companies have to define and articulate their risk appetite in sync with decisions made about their objectives and opportunities. The point of having a risk appetite statement is to have a framework that clearly states the acceptance and management of risk in business. It sets risk taking limits within the company. The risk appetite statement should convey the following:

- The nature of risks the business faces.
- Which risks the company is comfortable taking on and which risks are unacceptable.
- The nature of risks the business faces.
- Which risks the company is comfortable taking on and which risks are unacceptable.
- How much risk to accept in all the risk categories.
- The desired trade-off between risk and reward.
- Measures of risk and methods of examining and regulating risk exposures.

Entrepreneurship and Resilience

Entrepreneurs are characterized by a set of qualities known as resilience. These qualities play an especially large role in the early stages of developing an enterprise. Risk resilience is an extremely valuable characteristic as it is believed to protect entrepreneurs against the threat of challenges and changes in the business environment.

What is Entrepreneurial Resilience?

Resilience is used to describe individuals who have the ability to overcome setbacks related to their life and career aspirations. A resilient person is someone who is capable of easily and quickly recovering from setbacks. For the entrepreneur, resilience is a critical trait. Entrepreneurial resilience can be enhanced in the following ways:

- By developing a professional network of coaches and mentors
- By accepting that change is a part of life
- By viewing obstacles as something that can be overcome

Characteristics of a Resilient Entrepreneur

The characteristics required to make an entrepreneur resilient enough to go the whole way in their business enterprise are:

- A strong internal sense of control
- Ability to diversify and expand
- Strong social connections
- Survivor attitude

- Skill to learn from setbacks
- Cash-flow conscious habits
- Ability to look at the bigger picture
- Attention to detail

Tips



- Cultivate a great network of clients, suppliers, peers, friends and family. This will not
 only help you promote your business, but will also help you learn, identify new
 opportunities and stay tuned to changes in the market.
- Don't dwell on setbacks. Focus on what you need to do next to get moving again.
- While you should try, and curtail expenses, ensure that it is not at the cost of your growth.

5.5.8 Success & Failures: Understanding Successes and Failures in Entrepreneurship

Shyam is a famous entrepreneur, known for his success story. But what most people don't know, is that Shyam failed numerous times before his enterprise became a success. Read his interview to get an idea of what entrepreneurship is really about, straight from an entrepreneur who has both, failed and succeeded.

Interviewer: Shyam, I have heard that entrepreneurs are great risk-takers who are never afraid of failing. Is this true?

Shyam: Ha ha, no of course it's not true! Most people believe that entrepreneurs need to be fearlessly enthusiastic. But the truth is, fear is a very normal and valid human reaction, especially when you are planning to start your own business! In fact, my biggest fear was the fear of failing. The reality is, entrepreneurs fail as much as they succeed. The trick is to not allow the fear of failing to stop you from going ahead with your plans. Remember, failures are lessons for future success!

Interviewer: What, according to you, is the reason that entrepreneurs fail?

Shyam: Well, there is no one single reason why entrepreneurs fail. An entrepreneur can fail due to numerous reasons. You could fail because you have allowed your fear of failure to defeat you. You could fail because you are unwilling to delegate (distribute) work. As the saying goes, "You can do anything, but not everything!" You could fail because you gave up too easily — maybe you were not persistent enough. You could fail because you were focusing your energy on small, insignificant tasks and ignoring the tasks that were most important. Other reasons for failing are partnering with the wrong people, not being able to sell your product to the right customers at the right time at the right price... and many more reasons!

Interviewer: As an entrepreneur, how do you feel failure should be looked at?

Shyam: I believe we should all look at failure as an asset, rather than as something negative. The way I see it, if you have an idea, you should try to make it work, even if there is a chance that you will fail. That's because not trying is failure right there, anyway! And failure is not the worst thing that can happen. I think having regrets because of not trying, and wondering 'what if' is far worse than trying and actually failing.

Interviewer: How did you feel when you failed for the first time?

Shyam: I was completely heartbroken! It was a very painful experience. But the good news is, you do recover from the failure. And with every subsequent failure, the recovery process gets a lot easier. That's because you start to see each failure more as a lesson that will eventually help you succeed, rather than as an obstacle that you cannot overcome. You will start to realize that failure has many benefits.

Interviewer: Can you tell us about some of the benefits of failing?

Shyam: One of the benefits that I have experienced personally from failing is that the failure made me see things in a new light. It gave me answers that I didn't have before. Failure can make you a lot stronger. It also helps keep your ego in control.

Interviewer: What advice would you give entrepreneurs who are about to start their own enterprises?

Shyam: I would tell them to do their research and ensure that their product is something that is actually wanted by customers. I'd tell them to pick their partners and employees very wisely and cautiously. I'd tell them that it's very important to be aggressive - push and market your product as aggressively as possible. I would warn them that starting an enterprise is very expensive and that they should be prepared for a situation where they run out of money. I would tell them to create long term goals and put a plan in action to achieve that goal. I would tell them to build a product that is truly unique. Be very careful and ensure that you are not copying another start-up. Lastly, I'd tell them that it's very important that they find the right investors.

Interviewer: That's some really helpful advice, Shyam! I'm sure this will help all entrepreneurs to be more prepared before they begin their journey! Thank you for all your insight!



- Remember that nothing is impossible.
- Identify your mission and your purpose before you start.
- Plan your next steps don't make decisions hastily.

UNIT 5.6: Preparing to be an Entrepreneur

Unit Objectives 6



At the end of this unit, you will be able to:

- 1. Discuss how market research is carried out
- 2. Describe the 4 Ps of marketing
- 3. Discuss the importance of idea generation
- 4. Recall basic business terminology
- 5. Discuss the need for CRM
- 6. Discuss the benefits of CRM
- 7. Discuss the need for networking
- 8. Discuss the benefits of networking
- 9. Discuss the importance of setting goals
- 10. Differentiate between short-term, medium-term and long-term goals
- 11. Discuss how to write a business plan
- 12. Explain the financial planning process
- 13. Discuss ways to manage your risk
- 14. Describe the procedure and formalities for applying for bank finance
- 15. Discuss how to manage your own enterprise
- 16. List important questions that every entrepreneur should ask before starting an enterprise

5.6.1 Market Study / The 4 Ps of Marketing / Importance of an IDEA: Understanding Market Research

Market research is the process of gathering, analysing and interpreting market information on a product or service that is being sold in that market. It also includes information on:

- Past, present and prospective customers
- Customer characteristics and spending habits
- The location and needs of the target market
- The overall industry
- Relevant competitors

Market research involves two types of data:

- Primary information. This is research collected by yourself or by someone hired by you.
- Secondary information. This is research that already exists and is out there for you to find and use.

Primary research

Primary research can be of two types:

- Exploratory: This is open-ended and usually involves detailed, unstructured interviews.
- Specific: This is precise and involves structured, formal interviews. Conducting specific

Secondary research

Secondary research uses outside information. Some common secondary sources are:

- **Public sources:** These are usually free and have a lot of good information. Examples are government departments, business departments of public libraries etc.
- Commercial sources: These offer valuable information but usually require a fee to be paid. Examples are research and trade associations, banks and other financial institutions etc.
- **Educational institutions:** These offer a wealth of information. Examples are colleges, universities, technical institutes etc.

The 4 Ps of Marketing

The 4 Ps of marketing are Product, Price, Promotion and Place. Let's look at each of these 4 Ps in detail.

Product

A product can be:

- A tangible good
- An intangible service

Whatever your product is, it is critical that you have a clear understanding of what you are offering, and what its unique characteristics are, before you begin with the marketing process.

Some questions to ask yourself are:

- What does the customer want from the product/service?
- What needs does it satisfy?
- Are there any more features that can be added?
- Does it have any expensive and unnecessary features?

- How will customers use it?
- What should it be called?
- How is it different from similar products?
- How much will it cost to produce?

Price

Once all the elements of Product have been established, the Price factor needs to be considered. The Price of a Product will depend on several factors such as profit margins, supply, demand and the marketing strategy.

Some questions to ask yourself are:

- What is the value of the product/service to customers?
- Do local products/services have established price points?
- Is the customer price sensitive?
- Should discounts be offered?
- How is your price compared to that of your competitors?

Promotion

Once you are certain about your Product and your Price, the next step is to look at ways to promote it. Some key elements of promotion are advertising, public relations, social media marketing, email marketing, search engine marketing, video marketing and more. Some questions to ask yourself are:

- Where should you promote your product or service?
- What is the best medium to use to reach your target audience
- When would be the best time to promote your product?
- How are your competitors promoting their products?

Place

According to most marketers, the basis of marketing is about offering the right product, at the right price, at the right place, at the right time. For this reason, selecting the best possible location is critical for converting prospective clients into actual clients.

Some questions to ask yourself are:

- Will your product or service be looked for in a physical store, online or both?
- What should you do to access the most appropriate distribution channels?
- Will you require a sales force?

- Where are your competitors offering their products or services?
- Should you follow in your competitors' footsteps?
- Should you do something different from your competitors?

Importance of an IDEA

Some questions to ask yourself are:

Ideas are the foundation of progress. An idea can be small or ground-breaking, easy to accomplish or extremely complicated to implement. Whatever the case, the fact that it is an idea gives it merit. Without ideas, nothing is possible. Most people are afraid to speak out their ideas, out for fear of being ridiculed. However, if are an entrepreneur and want to remain competitive and innovative, you need to bring your ideas out into the light. Some ways to do this are by:

- Establishing a culture of brainstorming where you invite all interested parties to contribute
- Discussing ideas out loud so that people can add their ideas, views, opinions to them
- Being open minded and not limiting your ideas, even if the idea who have seems ridiculous
- Not discarding ideas that you don't work on immediately, but instead making a note of them and shelving them so they can be revisited at a later date.

Tips 🖳

- Keep in mind that good ideas do not always have to be unique.
- Remember that timing plays a huge role in determining the success of your idea.
- Situations and circumstances will always change, so be flexible and adapt your idea accordingly.

-5.6.2 Business Entity Concepts: Basic Business Terminology

If your aim is to start and run a business, it is crucial that you have a good understanding of basic business terms. Every entrepreneur should be well versed in the following terms:

- Accounting: A systematic method of recording and reporting financial transactions.
- Accounts payable: Money owed by a company to its creditors.
- Accounts Receivable: The amount a company is owed by its clients.
- Assets: The value of everything a company owns and uses to conduct its business.
- Balance Sheet: A snapshot of a company's assets, liabilities and owner's equity at a given moment.
- Bottom Line: The total amount a business has earned or lost at the end of a month.
- Business: An organization that operates with the aim of making a profit.
- Business to Business (B2B): A business that sells goods or services to another business.
- Business to Consumer (B2C): A business that sells goods or services directly to the end
- Capital: The money a business has in its accounts, assets and investments. The two main types of capital are debt and equity.
- Cash Flow: The overall movement of funds through a business each month, including income and expenses.
- Cash Flow Statement: A statement showing the money that entered and exited a business during a specific period of time.
- Contract: A formal agreement to do work for pay.
- Depreciation: The degrading value of an asset over time.
- Expense: The costs that a business incurs through its operations.
- Finance: The management and allocation of money and other assets.
- Financial Report: A comprehensive account of a business' transactions and expenses.
- Fixed Cost: A one-time expense.
- Income Statement (Profit and Loss Statement): Shows the profitability of a business during a period of time.
- Liabilities: The value of what a business owes to someone else.
- Marketing: The process of promoting, selling and distributing a product or service.
- Net Income/Profit: Revenues minus expenses.
- Net Worth: The total value of a business.
- Payback Period: The amount of time it takes to recover the initial investment of a business.
- Profit Margin: The ratio of profit, divided by revenue, displayed as a percentage.

- Return on Investment (ROI): The amount of money a business gets as return from an investment.
- Revenue: The total amount of income before expenses are subtracted.
- Sales Prospect: A potential customer.
- Supplier: A provider of supplies to a business.
- Target Market: A specific group of customers at which a company's products and services are aimed.
- Valuation: An estimate of the overall worth of the business.
- Variable Cost: Expenses that change in proportion to the activity of a business.
- Working Capital: Calculated as current assets minus current liabilities.
- Business Transactions: There are three types of business transactions. These are:
 - Simple Transactions Usually a single transaction between a vendor and a customer. For example: Buying a cup of coffee.
 - Complex Transactions These transactions go through a number of events before they can be completed. For example: Buying a house.
 - Ongoing transactions These transactions usually require a contract. For example:
 Contract with a vendor.

Basic Accounting Formulas

Take a look at some important accounting formula that every entrepreneur needs to know.

1. **The Accounting Equation**: This is value of everything a company owns and uses to conduct its business.

Formula: Assets = Liability + Owner's Equity

2. Net Income: This is the profit of the company.

Formula: Net Income = Revenues – Expenses

3. **Break-Even Point**: This is the point at which the company will not make a profit or a loss. The total cost and total revenues are equal.

Formula: Break-Even = Fixed Costs/Sales Price - Variable Cost per Unit

4. **Cash Ratio**: This tells us about the liquidity of a company.

Formula: Cash Ratio = Cash/Current Liabilities

5. **Profit Margin:** This is shown as a percentage. It shows what percentage of sales are left over after all the expenses are paid by the business.

Formula: Profit Margin = Net Income/Sales

6. **Debt-to-Equity Ratio:** This ratio shows how much equity and debt a company is using to finance its assets, and whether the shareholder equity can fulfil obligations to creditors if the business starts making a loss.

Formula: Debt-to-Equity Ratio = Total Liabilities/Total Equity

7. **Cost of Goods Sold**: This is the total of all costs used to create a product or service, which has been sold.

Formula: Cost of Goods Sold = Cost of Materials/Inventory - Cost of Outputs

8. **Return on Investment (ROI)**: This is usually shown as a percentage. It calculates the profits of an investment as a percentage of the original cost.

Formula: ROI = Net Profit/Total Investment * 100

9. **Simple Interest**: This is money you can earn by initially investing some money (the principal).

Formula:

A = P(1 + rt); R = r * 100

Where:

A = Total Accrued Amount (principal + interest)

P = Principal Amount

I = Interest Amount

r = Rate of Interest per year in decimal; <math>r = R/100

t = Time Period involved in months or years

10. **Annual Compound Interest**: This calculates the addition of interest to the principal sum of a loan or deposit.

Formula:

 $A = P (1 + r/n) ^ nt$:

Where:

A = the future value of the investment/loan, including interest

P = the principal investment amount (the initial deposit or loan amount)

r = the annual interest rate (decimal)

n = the number of times that interest is compounded per year

t = the number of years the money is invested or borrowed for

5.6.3 CRM & Networking: What is CRM?

CRM stands for Customer Relationship Management. Originally the expression Customer Relationship Management meant managing one's relationship with customers. However, today it refers to IT systems and software designed to help companies manage their relationships.

The Need for CRM

The better a company can manage its relationships with its customers, the higher the chances of the company's success.

For any entrepreneur, the ability to successfully retain existing customers and expand the enterprise is paramount. This is why IT systems that focus on addressing the problems of dealing with customers on a daily basis are becoming more and more in demand.

Customer needs change over time, and technology can make it easier to understand what customers really want. This insight helps companies to be more responsive to the needs of their customers. It enables them to modify their business operations when required, so that their customers are always served in the best manner possible. Simply put, CRM helps companies recognize the value of their clients and enables them to capitalize on improved customer relations.

Benefits of CRM

CRM has a number of important benefits:

- It helps improve relations with existing customers which can lead to:
 - Increased sales

- o Identification of customer needs
- Cross-selling of products
- It results in better marketing of one's products or services
- It results in better marketing of one's products or services
- It enhances customer satisfaction and retention
- It improves profitability by identifying and focusing on the most profitable customers

What is Networking?

In business, networking means leveraging your business and personal connections in order to bring in a regular supply of new business. This marketing method is effective as well as low cost. It is a great way to develop sales opportunities and contacts. Networking can be based on referrals and introductions, or can take place via phone, email, and social and business networking websites.

The Need for Networking

Networking is an essential personal skill for business people, but it is even more important for entrepreneurs. The process of networking has its roots in relationship building. Networking results in greater communication and a stronger presence in the entrepreneurial ecosystem. This helps build strong relationships with other entrepreneurs. Business networking events held across the globe play a huge role in connecting like-minded entrepreneurs who share the same fundamental beliefs in communication, exchanging ideas and converting ideas into realities. Such networking events also play a crucial role in connecting entrepreneurs with potential investors. Entrepreneurs may have vastly different experiences and backgrounds but they all have a common goal in mind – they all seek connection, inspiration, advice, opportunities and mentors. Networking offers them a platform to do just that.

Benefits of Networking

Networking offers numerous benefits for entrepreneurs. Some of the major benefits are:

- Getting high quality leads
- Increased business opportunities
- Good source of relevant connections
- Advice from like-minded entrepreneurs
- Gaining visibility and raising your profile
- Meeting positive and enthusiastic people
- Increased self-confidence
- Satisfaction from helping others
- Building strong and lasting friendships

Tips



- Use social media interactions to identify needs and gather feedback.
- When networking, ask open-ended questions rather than yes/no type questions.

5.6.4 Business Plan: Why Set Goals? -

Setting goals is important because it gives you long-term vision and short-term motivation. Goals can be short term, medium term and long term.

Short-Term Goals

• These are specific goals for the immediate future.

Example: Repairing a machine that has failed.

Medium-Term Goals

- These goals are built on your short-term goals.
- They do not need to be as specific as your short-term goals.

Example: Arranging for a service contract to ensure that your machines don't fail again.

Long-Term Goals

These goals require time and planning.

They usually take a year or more to achieve.

Example: Planning your expenses so you can buy new machinery

Why Create a Business Plan?

A business plan is a tool for understanding how your business is put together. It can be used to monitor progress, foster accountable and control the fate of the business. It usually offers a 3-5year projection and outlines the plan that the company intends to follow to grow its revenues. A business plan is also a very important tool for getting the interest of key employees or future investors.

A business plan typically comprises of eight elements.

Executive Summary

The executive summary follows the title page. The summary should clearly state your desires as the business owner in a short and business like way. It is an overview of your business and your plans. Ideally this should not be more than 1-2 pages.

Your Executive Summary should include:

• The Mission Statement: Explain what your business is all about.

Example: Nike's Mission Statement

Nike's mission statement is "To bring inspiration and innovation to every athlete in the world."

- Company Information: Provide information like when your business was formed, the names and roles of the founders, the number of employees, your business location(s) etc.
- Growth Highlights: Mention examples of company growth. Use graphs and charts where possible.

- Your Products/Services: Describe the products or services provided.
- Financial Information: Provide details on current bank and investors.
- Summarize future plans: Describe where you see your business in the future.

Business Description

The second section of your business plan needs to provide a detailed review of the different elements of your business. This will help potential investors to correctly understand your business goal and the uniqueness of your offering.

Your Business Description should include:

- A description of the nature of your business
- The market needs that you are aiming to satisfy
- The ways in which your products and services meet these needs
- The specific consumers and organizations that you intend to serve
- Your specific competitive advantages

Market Analysis

The market analysis section usually follows the business description. The aim of this section is to showcase your industry and market knowledge. This is also the section where you should lay down your research findings and conclusions.

Your Market Analysis should include:

- Your industry description and outlook
- Information on your target market
- The needs and demographics of your target audience
- The size of your target market

- The amount of market share you want to capture
- Your pricing structure
- Your competitive analysis
- Any regulatory requirements

Organization & Management

This section should come immediately after the Market Analysis.

Your Organization & Management section should include:

- Your company's organizational structure
- Detailed descriptions of each division/department and its function
- Details of your company's ownership
- The salary and benefits package that you offer your people
- Details of your management team
- Qualifications of your board of directors

Service or Product Line

The next section is the service or product line section. This is where you describe your service or product, and stress on their benefits to potential and current customers. Explain in detail why your product of choice will fulfil the needs of your target audience.

Your Service or Product Line section should include:

- A description of your product/service
- A description of your product or service's life cycle
- A list of any copyright or patent filings
- A description of any R&D activities that you are involved in or planning

Marketing & Sales

Once the Service or Product Line section of your plan has been completed, you should start on the description of the marketing and sales management strategy for your business.

Your Marketing section should include the following strategies:

- Market penetration strategy: This strategy focuses on selling your existing products or services in existing markets, in order to increase your market share.
- **Growth strategy:** This strategy focuses on increasing the amount of market share, even if it reduces earnings in the short-term.
- **Channels of distribution strategy:** These can be wholesalers, retailers, distributers and even the internet.
- **Communication strategy:** These can be written strategies (e-mail, text, chat), oral strategies (phone calls, video chats, face-to-face conversations), non-verbal strategies (body language, facial expressions, tone of voice) and visual strategies (signs, webpages, illustrations).

Your Sales section should include the following information:

- A salesforce strategy: This strategy focuses on increasing the revenue of the enterprise.
- A breakdown of your sales activities: This means detailing out how you intend to sell your products or services will you sell it offline or online, how many units do you intend to sell, what price do you plan to sell each unit at, etc.

Funding Request

This section is specifically for those who require funding for their venture.

The Funding Request section should include the following information:

- How much funding you currently require.
- How much funding you will require over the next five years. This will depend on your long-term goals.
- The type of funding you want and how you plan to use it. Do you want funding that can be used only for a specific purpose, or funding that can be used for any kind of requirement?
- Strategic plans for the future. This will involve detailing out your long-term plans what these plans are and how much money you will require to put these plans in motions.
- Historical and prospective financial information. This can be done by creating and
 maintaining all your financial records, right from the moment your enterprise started, to
 the present day. Documents required for this are your balance sheet which contains
 details of your company's assets and liabilities, your income statement which lists
 your company's revenues, expenses and net income for the year, your tax returns
 (usually for the last three years) and your cash flow budget which lists the cash that
 came in, the cash that went out and states whether you had a cash deficit (negative
 balance) or surplus (positive balance) at the end of each month.

Financial Planning



Before you begin building your enterprise, you need to plan your finances. Take a look at the steps for financial planning:

Step 1: Create a financial plan. This should include your goals, strategies and timelines for accomplishing these goals.

Step 2: Organize all your important financial documents. Maintain a file to hold your investment details, bank statements, tax papers, credit card bills, insurance papers and any other financial records.

Step 3: Calculate your net worth. This means figure out what you own (assets like your house, bank accounts, investments etc.), and then subtract what you owe (liabilities like loans, pending credit card amounts etc.) the amount you are left with is your net worth.

Step 4: Make a spending plan. This means write down in detail where your money will come from, and where it will go.

Step 5: Build an emergency fund. A good emergency fund contains enough money to cover at least 6 months' worth of expenses.

Step 6: Set up your insurance. Insurance provides long term financial security and protects you against risk.

Risk Management

As an entrepreneur, it is critical that you evaluate the risks involved with the type of enterprise that you want to start, before you begin setting up your company. Once you have identified potential risks, you can take steps to reduce them. Some ways to manage risks are:

- Research similar business and find out about their risks and how they were minimized.
- Evaluate current market trends and find out if similar products or services that launched a while ago are still being well received by the public.
- Think about whether you really have the required expertise to launch your product or service.
- Examine your finances and see if you have enough income to start your enterprise.
- Be aware of the current state of the economy, consider how the economy may change over time, and think about how your enterprise will be affected by any of those changes.
- Create a detailed business plan.

Tips



- Ensure all the important elements are covered in your plan.
- Scrutinize the numbers thoroughly.
- Be conservative in your approach and your projections.
- Use visuals like charts, graphs and images wherever possible.

5.6.5 Procedure and Formalities for Bank Finance: The Need for Bank Finance

For entrepreneurs, one of the most difficult challenges faced involves securing funds for start-ups. With numerous funding options available, entrepreneurs need to take a close look at which funding methodology works best for them. In India, banks are one of the largest funders of start-ups, offering funding to thousands of start-ups every year.

What Information Should Entrepreneurs Offer Banks for Funding?

When approaching a bank, entrepreneurs must have a clear idea of the different criteria that banks use to screen, rate and process loan applications. Entrepreneurs must also be aware of the importance of providing banks with accurate and correct information. It is now easier than ever for financial institutions to track any default behaviour of loan applicants. Entrepreneurs looking for funding from banks must provide banks with information relating to their general credentials, financial situation and guarantees or collaterals that can be offered.

General Credentials

This is where you, as an entrepreneur, provide the bank with background information on yourself. Such information includes:

- Letter(s) of Introduction: This letter should be written by a respected business person who knows you well enough to introduce you. The aim of this letter is set across your achievements and vouch for your character and integrity.
- Your Profile: This is basically your resume. You need to give the bank a good idea of your
 educational achievements, professional training, qualifications, employment record and
 achievements.
- Business Brochure: A business brochure typically provides information on company products, clients, how long the business has been running for etc.
- Bank and Other References: If you have an account with another bank, providing those bank references is a good idea.
- Proof of Company Ownership or Registration: In some cases, you may need to provide
 the bank with proof of company ownership and registration. A list of assets and
 liabilities may also be required.

Financial Situation

Banks will expect current financial information on your enterprise. The standard financial reports you should be prepared with are:

- Balance Sheet
- Cash-Flow Statement
- Business Plan

- Profit-and-Loss Account
- Projected Sales and Revenues
- Feasibility Study

Guarantees or Collaterals

Usually banks will refuse to grant you a loan without security. You can offer assets which the bank can seize and sell off if you do not repay the loan. Fixed assets like machinery, equipment, vehicles etc. are also considered to be security for loans.

The Lending Criteria of Banks

Your request for funding will have a higher chance of success if you can satisfy the following lending criteria:

- Good cash flow
- Adequate security
- Good reputation

- Adequate shareholders' funds
- Experience in business

The Procedure



To apply for funding the following procedure will need to be followed.

- 1. Submit your application form and all other required documents to the bank.
- 2. The bank will carefully assess your credit worthiness and assign ratings by analysing your business information with respect to parameters like management, financial, operational and industry information as well as past loan performance.
- 3. The bank will make a decision as to whether or not you should be given funding.



- Get advice on funding options from experienced bankers.
- Be cautious and avoid borrowing more than you need, for longer than you need, at an interest rate that is higher than you are comfortable with.

5.6.6 Enterprise Management - An Overview: How to Manage Your Enterprise?

To manage your enterprise effectively you need to look at many different aspects, right from managing the day-to-day activities to figuring out how to handle a large-scale event. Let's take a look at some simple steps to manage your company effectively.

Step 1: Use your leadership skills and ask for advice when required.

Let's take the example of Ramu, an entrepreneur who has recently started his own enterprise. Ramu has good leadership skills – he is honest, communicates well, knows how to delegate work etc. These leadership skills definitely help Ramu in the management of his enterprise. However, sometimes Ramu comes across situations that he is unsure how to handle. What should Ramu do in this case? One solution is for him to find a more experienced manager who is willing to mentor him. Another solution is for Ramu to use his networking skills so that he can connect with managers from other organizations, who can give him advice on how to handle such situations.

Step 2: Divide your work amongst others – realize that you cannot handle everything yourself.

Even the most skilled manager in the world will not be able to manage every single task that an enterprise will demand of him. A smart manager needs to realize that the key to managing his enterprise lies in his dividing all his work between those around him. This is known as delegation. However, delegating is not enough. A manager must delegate effectively if he wants to see results. This is important because delegating, when done incorrectly, can result in you creating even more work for yourself. To delegate effectively, you can start by making two lists. One list should contain the things that you know you need to handle yourself. The second list should contain the things that you are confident can be given to others to manage and handle.

Besides incorrect delegation, another issue that may arise is over-delegation. This means giving away too many of your tasks to others. The problem with this is, the more tasks you delegate, the more time you will spend tracking and monitoring the work progress of those you have handed the tasks to. This will leave you with very little time to finish your own work.

Step 3: Hire the right people for the job.

Hiring the right people goes a long way towards effectively managing your enterprise. To hire the best people suited for the job, you need to be very careful with your interview process. You should ask potential candidates the right questions and evaluate their answers carefully. Carrying out background checks is always a good practice. Running a credit check is also a good idea, especially if the people you are planning to hire will be handling your money. Create a detailed job description for each role that you want filled and ensure that all candidates have a clear and correct understanding of the job description. You should also have an employee manual in place, where you put down every expectation that you have from your employees. All these actions will help ensure that the right people are approached for running your enterprise.

Step 4: Motivate your employees and train them well.

Your enterprise can only be managed effectively if your employees are motivated to work hard for your enterprise. Part of being motivated involves your employees believing in the vision and mission of your enterprise and genuinely wanting to make efforts towards pursuing the same. You can motivate your employees with recognition, bonuses and rewards for achievements. You can also motivate them by telling them about how their efforts have led to the company's success. This will help them feel pride and give them a sense of responsibility that will increase their motivation. Besides motivating your people, your employees should be constantly trained in new practices and technologies. Remember, training is not a one-time effort. It is a consistent effort that needs to be carried out regularly.

Step 5: Train your people to handle your customers well.

Your employees need to be well-versed in the art of customer management. This means they should be able to understand what their customers want, and also know how to satisfy their needs. For them to truly understand this, they need to see how you deal effectively with customers.

This is called leading by example. Show them how you sincerely listen to your clients and the efforts that you put into understand their requirements. Let them listen to the type of questions that you ask your clients so they understand which questions are appropriate.

Step 6: Market your enterprise effectively.

Also, hire a marketing agency if you feel you need help in this area. Now that you know what is required to run your enterprise effectively, put these steps into play, and see how much easier managing your enterprise becomes!

Tips



- Get advice on funding options from experienced bankers.
- Be cautious and avoid borrowing more than you need, for longer than you need, at an interest rate that is higher than you are comfortable with.

5.6.7 20 Questions to Ask Yourself before Considering Entrepreneurship

- 1. Why am I starting a business?
- 11. What would it take to build a minimum viable product to test the market?
- 2. What problem am I solving?
- 12. How much money do I need to get started?
- 3. Have others attempted to solve this problem before? Did they succeed or fail?
- 13. Will I need to get a loan?
- 4. Do I have a mentor or industry expert that I can call on?
- 14. How soon will my products or services be available?
- 5. Who is my ideal customer?
- 15. When will I break even or make a profit?
- 6. Who are my competitors?
- 16. How will those who invest in my idea make a profit?
- 7. What makes my business idea different from other business ideas?
- 17. How should I set up the legal structure of my business?
- 8. What are the key features of my product or service?
- 18. What taxes will I need to pay?
- 9. Have I done a SWOT analysis?
- 19. What kind of insurance will I need?
- 10. What is the size of the market that will buy my product or service?
- 20. Have I reached out to potential customers for feedback?



- It is very important to validate your business ideas before you invest significant time, money and resources into it.
- The more questions you ask yourself, the more prepared you will be to handle to highs and lows of starting an enterprise.

Footnotes:

- 1. A mentor is a trusted and experienced person who is willing to coach and guide you.
- 2. A customer is someone who buys goods and/or services.
- 3. A competitor is a person or company that sells products and/or services similar to your products and/or services.
- 4. SWOT stands for Strengths, Weaknesses, Opportunities and Threats. To conduct a SWOT analysis of your company, you need to list down all the strengths and weaknesses of your company, the opportunities that are present for your company and the threats faced by your company.
- 5. A minimum viable product is a product that has the fewest possible features, that can be sold to customers, for the purpose of getting feedback from customers on the product.
- 6. A company is said to break even when the profits of the company are equal to the costs.
- 7. The legal structure could be a sole proprietorship, partnership or limited liability partnership.
- 8. There are two types of taxes direct taxes payable by a person or a company, or indirect taxes charged on goods and/or services.
- 9. There are two types of insurance life insurance and general insurance. Life insurance overs human.
- Life while general insurance covers assets like animals, goods, cars etc

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