Skill India
कौशल भारत-कुशल भारत

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

N·S·D·C
National
Skill Development
Corporation
Transforming the skill landscape

ESSCI
Skilling India in Electronics

Participant Handbook

Sector
Electronics

Sub- Sector
Consumer Electronics & IT Hardware

Occupation
Purchase and Procurement

Reference ID: **ELE/Q7702, Version 3.0**
NSQF Level 4

Purchase Executive

Published by

Electronics Sector Skills Council of India (ESSCI)
155, 2nd Floor, ESC House, Okhla Industrial Area, Phase 3, New Delhi - 110020, India
Email : info@essc-india.org
Website: www.essc-india.org
Phone: +91 11 46035050, +91 8447738501

First Edition, July 2022

This book is sponsored by Electronics Sector Skills Council of India (ESSCI)

Skilling is building a better India.
If we have to move India towards development then Skill Development should be our mission.

Shri Narendra Modi
Prime Minister of India

Skill India
कौशल भारत-कुशल भारत

ESSCI
Skilling India in Electronics

N·S·D·C
National Skill Development Corporation
Transforming the skill landscape

Certificate

COMPLIANCE TO
QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

ELECTRONICS SECTOR SKILLS COUNCIL OF INDIA

for

SKILLING CONTENT : PARTICIPANT HANDBOOK

Complying to National Occupational Standards of

Job Role/Qualification Pack **"Purchase Executive"** QP No.**"ELE/Q7702, NSQF Level 4"**

Date of Issuance: 24.02.2022
Valid up to*: 02.06.2025

*Valid up to the next review date of the Qualification Pack or the 'Valid up to' date mentioned above (whichever is earlier)

Authorized Signatory
Electronics Sector Skills Council of India

Acknowledgments

This participant's handbook meant for Purchase Executive is a sincere attempt to ensure the availability of all the relevant information to the existing and prospective job holders in this job role. We have compiled the content with inputs from the relevant Subject Matter Experts (SMEs) and industry members to ensure it is the latest and authentic. We express our sincere gratitude to all the SMEs and industry members who have made invaluable contributions to the completion of this participant's handbook.

I would like to thank the SME and the team at the ESSCI along with the industry partners for the tireless effort in bringing the handbook in the current format.

This handbook will help deliver skill-based training in the field of Purchase Executive. We hope that it will benefit all the stakeholders, such as participants, trainers, and evaluators. We have made all efforts to ensure the publication meets the current quality standards for the successful delivery of QP/ NOS-based training programs. We welcome and appreciate any suggestions for future improvements to this hand book.

ABOUT THIS BOOK

This participant handbook has been designed to serve as a guide for participants who aim to obtain the required knowledge and skills to undertake various activities as a Purchase Executive. Its content has been aligned with the latest Qualification Pack (QP) prepared for the job role. With a qualified trainer's guidance, the participants will be equipped with the following for working efficiently in the job role:

- Knowledge and Understanding: The relevant purchasing knowledge and understanding of materials to perform the required tasks.
- Performance Criteria: The essential skills through hands-on training to perform the purchasing operations to the applicable quality standards.
- Professional Skills: The Ability to make an appropriate purchasing decisions about the field of work.

The handbook details the relevant activities to be carried out by a Purchase Executive. After studying this handbook, job holders will be adequately skilled to carry out their duties efficiently according to the applicable quality standards, with minimum supervision.

The handbook has been divided into an appropriate number of units and sub-units based on the content of the relevant QP. We hope it will facilitate easy and structured learning for the participants. We sincerely hope that participants will obtain enhanced knowledge and skills after studying this handbook and make career progress in the relevant and senior job roles.

The Participant Handbook is designed based on the National Skill Qualification Framework (NSQF) aligned Qualification Pack (QP) and it comprises of the following National Occupation Standards (NOS)/ topics:

- ELE/N7703 – Collect information about materials and suppliers
- ELE/N7705 – Issue purchase order and receive supplies
- ELE/N7704 – Maintain inventory of materials
- ELE/N9905 – Work effectively at the workplace
- ELE/N1002 – Apply health and safety practices at the workplace

Symbols Used

Key Learning Outcomes

Exercise

Steps

Tips

Notes

Unit Objectives

Table of Contents

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

N·S·D·C
National
Skill Development
Corporation
Transforming the skill landscape

Skill India
कौशल भारत - कुशल भारत

ESSCI
Skilling India in Electronics

1. Introduction to the role of Purchase Executive

Unit 1.1 Size and scope of the electronics industry and its various sub- sectors

Unit 1.2 Basics of electronics and related concepts.

Unit 1.3 Opportunities for purchase executives in electronic industry.

Unit 1.4 Roles and responsibilities of a purchase executive

Key Learning Outcomes

By the end of this module, participants will be able to:

- Describe the size and scope of the electronics industry and its various sub- sectors.
- Discuss the various opportunities for a Purchase Executive in the electronics industry.
- Define the basics of electronics and related concepts.
- Discuss the role and responsibilities of a Purchase Executive.
- Discuss organisational policies on incentives, delivery standards, personnel management and public relations (PR).

Unit 1.1 Size and scope of theelectronics industry and its various sub- sectors

Unit Objectives

By the end of this unit, participants will be able to:

1. Describe the size and scope of the Electronics industry.
2. Identify the sub-sectors of the Electronics industry.

1.1.1 Describe the size and scope of the electronics industry and its various sub- sectors

The Indian Electronics System Design & Manufacturing (ESDM) industry is one of the vital sectors of the Indian economy. The country has witnessed a substantial spike in demand for electronic products in the last few years. Today, India is positioned as the second-largest mobile phone manufacturer globally, with a surging internet penetration rate.

The ESDM sector is playing a vital role in the Indian government's goal of generating US$ 1 trillion of economic value from the digital economy by 2025. With several government initiatives aiming to boost domestic manufacturing, India is witnessing increased production and assembly activities across products, such as consumer electronics and mobile phones.

Market Size

- The Indian electronics manufacturing industry is projected to reach US$ 520 billion by 2025.
- In FY22 (until October 2021), imports of electronics goods stood at US$ 28.59 billion, whereas exports stood at US$ 7.89 billion.
- The demand for electronic products is expected to rise to US$ 400 billion by 2025 from US$ 33 billion in Fy20.
- The electronics market has witnessed a growth in demand, with market size increasing from US$ 145 billion in FY16 to US$ 215 billion in FY19—the market witnessed a growth of 14% CAGR from 2016-19.
- India's exports of electronic goods were valued at US$ 11.7 billion in FY21.
- Smartphone shipments in India increased by ~82% YoY to reach 33.0 million units in the second quarter of 2021.
- The Electronics System Design & Manufacturing (ESDM) is broadly segregated into—electronics system and electronics design.

- The electronics system market is expected to witness 2.3x demand of its current size (FY19) to reach US$ 160 billion by FY25.
- Electronics design segment, growing at 20.1%, was 22% of the ESDM market size in FY19; it is anticipated to be 27% of the ESDM market size in FY25.
- India's consumer electronics and appliances industry is expected to become the 5th largest globally by 2025.
- According to the Department for Promotion of Industry and Internal Trade, from April 2000 to June 2021, Foreign Direct Investment (FDI) equity inflows stood at US$ 3,176.29 million.

1.1.2 Sub-Sectors of the Electronics System Design & Manufacturing (ESDM) Industry

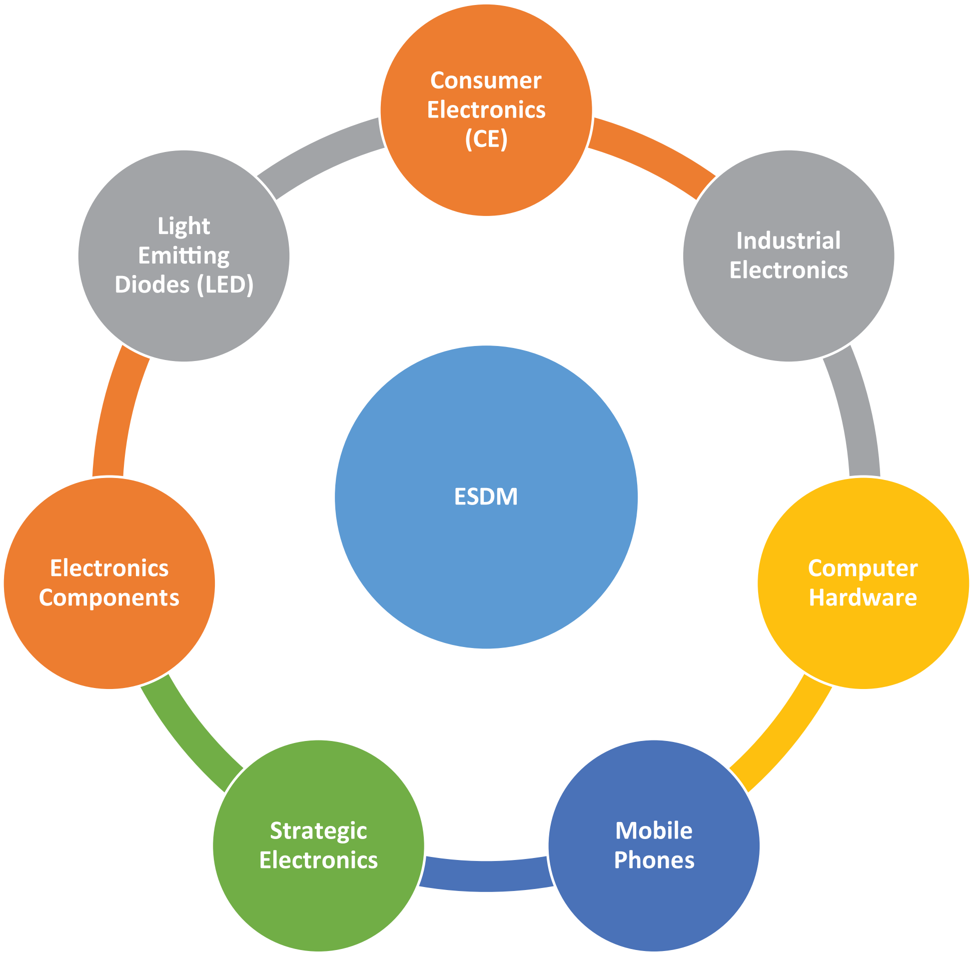


Fig. 1.1.1 Sub-sectors of the Electronics System Design & Manufacturing (ESDM) Industry

Notes

Notes

Unit 1.2 Basics of electronics and related concepts

Unit Objectives

By the end of this unit, participants will be able to:

1. Fundamental knowledge of Electronics

1.2.1 Define the basics of electronics and related concepts

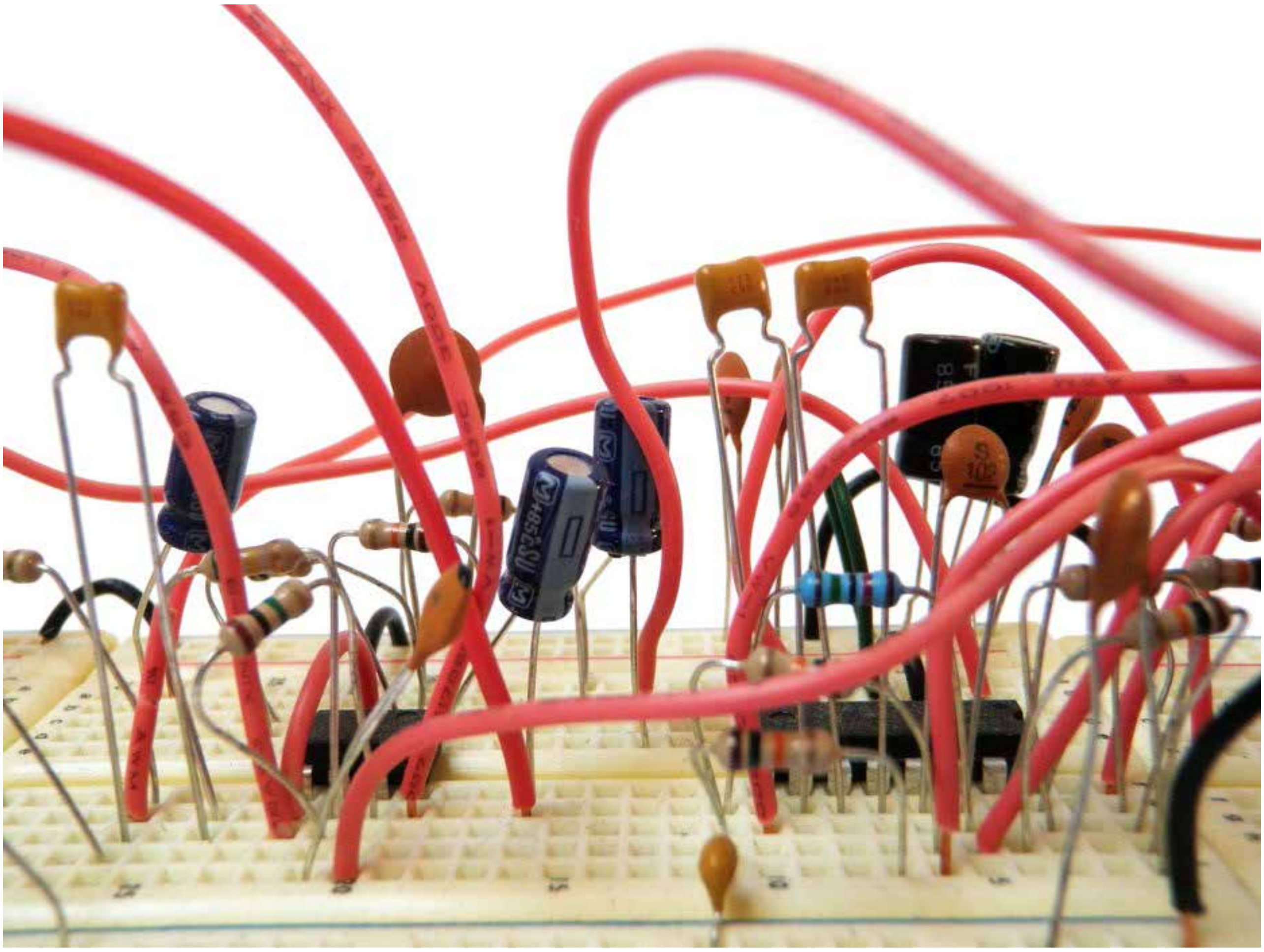


Figure 1.2.1 Electrical Components

Getting started with basic electronics is easier than you might think.This is a quick overview into practical electronics and it is not my goal to delve deeply into the science of electrical engineering.

Electricity

Figure 1.2.1(A) Electrical Signals

- There are two types of electrical signals, those being alternating current (AC), and direct current (DC).
- With alternating current, the direction electricity flows throughout the circuit is constantly reversing. You may even say that it is alternating direction. The rate of reversal is measured in Hertz, which is the number of reversals per second. So, when they say that the US power supply is 60 Hz, what they mean is that it is reversing 120 times per second (twice per cycle).
- With Direct Current, electricity flows in one direction between power and ground. In this arrangement there is always a positive source of voltage and ground (0V) source of voltage. You can test this by reading a battery with a multimeter.
- Speaking of voltage, electricity is typically defined as having a voltage and a current rating. Voltage is obviously rated in Volts and current is rated in Amps. For instance, a brand new 9V battery would have a voltage of 9V and a current of around 500mA (500 milliamps).
- Electricity can also be defined in terms of resistance and watts.

Circuits

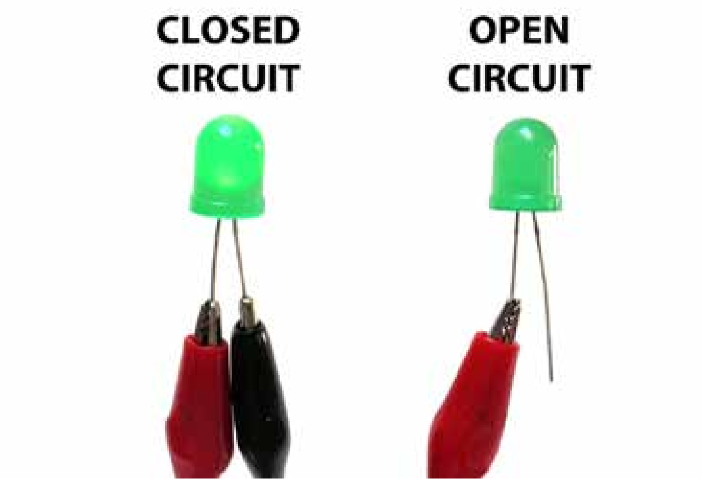


Figure 1.2.1 (B) Closed & Open Circuit

- A circuit is a complete and closed path through which electric current can flow.
- A closed circuit would allow the flow of electricity between power and ground.
- An open circuit would break the flow of electricity between power and ground.
- Anything that is part of this closed system and that allows electricity to flow between power and ground is considered to be part of the circuit.

Resistance

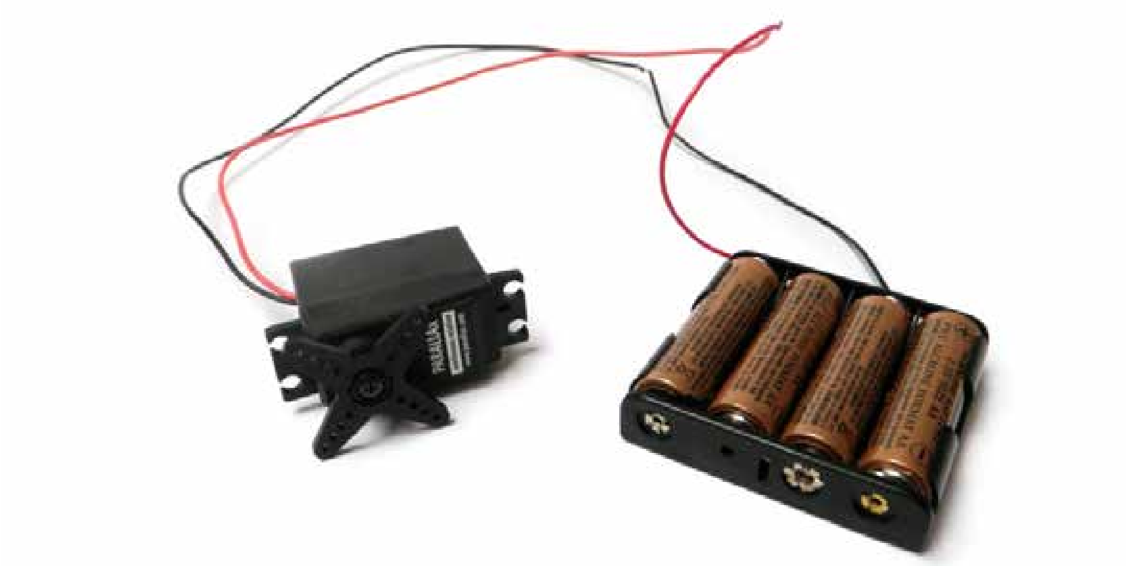


Figure 1.2.1 (C) Resistance

- For instance, in the circuit above, the motor that electricity is flowing through is adding resistance to the flow of electricity. Thus, all of the electricity passing through the circuit is being put to use.
- In other words, there needs to be something wired between positive and ground that adds resistance to the flow of electricity and uses it up. If positive voltage is connected directly to ground and does not first pass through something that adds resistance, like a motor, this will result in a short circuit. This means that the positive voltage is connected directly to ground.

- **It is very important to prevent short circuits by making sure that the positive voltage is never wired directly to ground.**

Series vs. Parallel

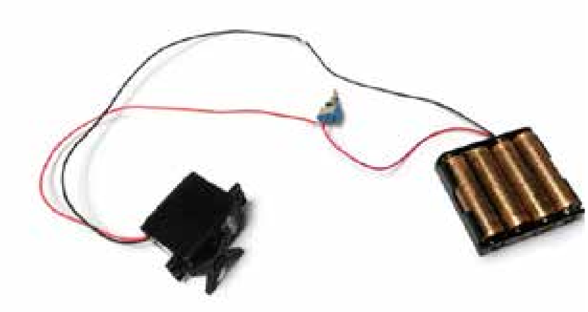


Figure 1.2.1 (C) 1 Series Wiring

Figure 1.2.1 (C) 2 Parallel Wiring

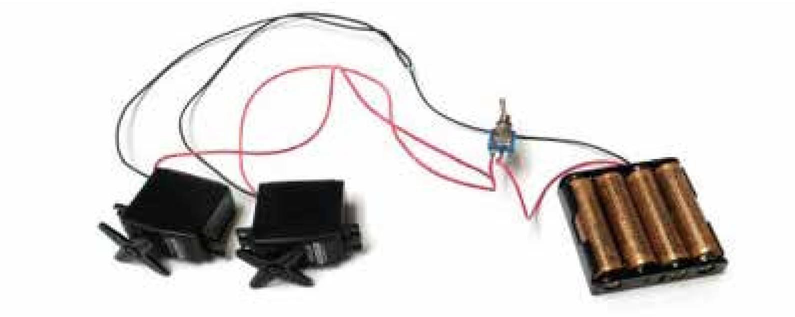


Figure 1.2.1 (C) 3 Parallel motor & Series Wiring

- There are two different ways in which you can wire things together called series and parallel.
- When things are wired in series, things are wired one after another, such that electricity has to pass through one thing, then the next thing, then the next, and so on.
- In the first example, the motor, switch and battery are all wired in series because the only path for electricity to flow is from one, to the next, and to the next.
- When things are wired in parallel, they are wired side by side, such that electricity passes through all of them at the same time, from one common point to another common point
- In the next example, the motors are wired in parallel because the electricity passes through both motors from one common point to another common point.
- In the final example the motors are wired in parallel, but the pair of parallel motors, switch and batteries are all wired in series. So, the current is split between the motors in a parallel fashion, but still must pass in series from one part of the circuit to the next.

Basic Components

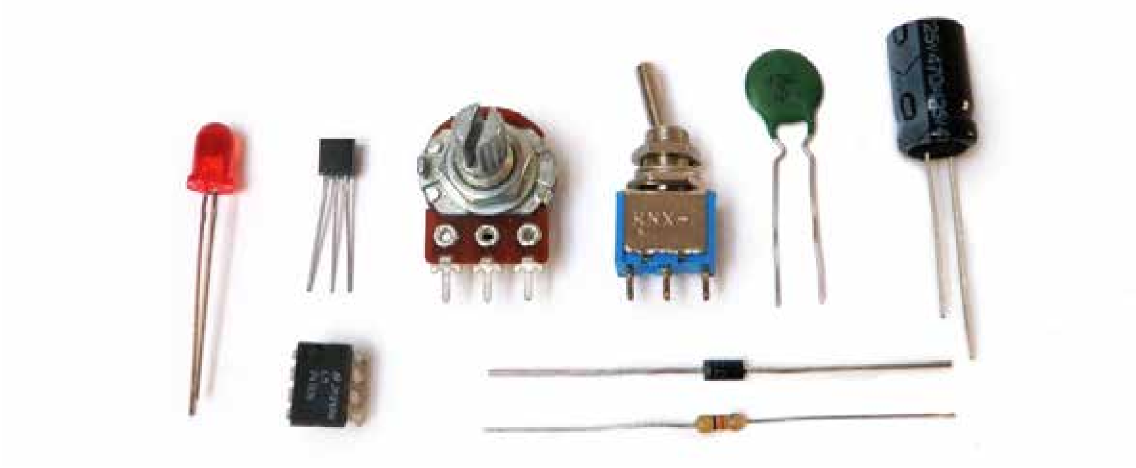


Figure 1.2.1 (D) Basic components

In order to build circuits, you will need to become familiar with a few basic components. These components may seem simple, but are the bread and butter of most electronics projects. Thus, by learning about these few basic parts, you will be able to go a long way.

Resistors

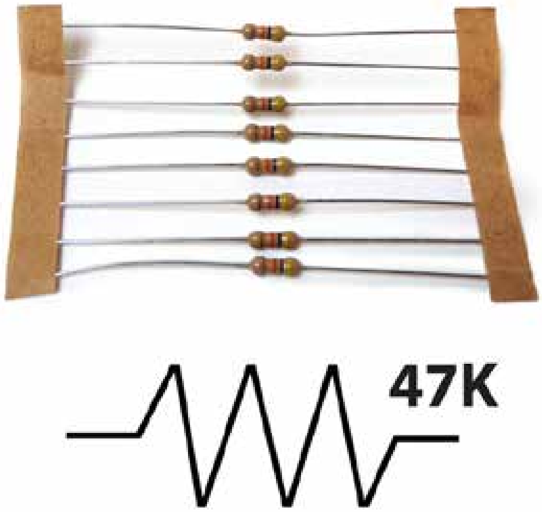


Figure 1.2.1 (E) Resistors

- As the name implies, resistors add resistance to the circuit and reduces the flow of electrical current. It is represented in a circuit diagram as a pointy squiggle with a value next to it.
- The different markings on the resistor represent different values of resistance. These values are measured in ohms.
- Resistors also come with different wattage ratings. For most low-voltage DC circuits, 1/4 watt resistors should be suitable.
- Values are read from left to right towards the (typically) gold band. The first two colors represent the resistor value, the third represents the multiplier, and the fourth (the gold band) represents the tolerance or precision of the component. You can tell the value of each color by looking at a resistor color value chart.
- Anyhow... a resistor with the markings brown, black, orange, gold will translate as follows: 1 (brown) 0 (black) x 1,000 = 10,000 with a tolerance of +/- 5%
- Any resistor of over 1000 ohms is typically shorted using the letter K. For instance, 1,000 would be 1K; 3,900, would translate to 3.9K; and 470,000 ohms would become 470K.
- Values of ohms over a million are represented using the letter M. In this case, 1,000,000 ohms would become 1M.

Capacitors

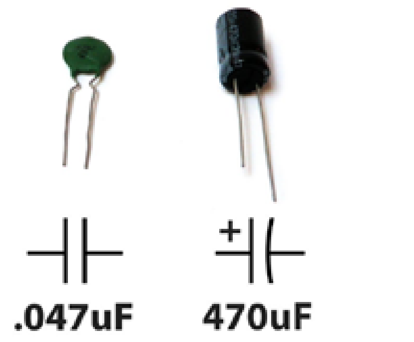


Figure 1.2.1 (F) Capacitors

- A capacitor is a component that stores electricity and then discharges it into the circuit when there is a drop in electricity.
- Capacitors are measured in Farads. The values that you will typically encounter in most capacitors are measured in picofarad (pF), nanofarad (nF), and microfarad (uF).
- The most commonly encountered types of capacitors are ceramic disc capacitors that look like tiny M&Ms with two wires sticking out of them and electrolytic capacitors that look more like small cylindrical tubes with two wires coming out the bottom (or sometimes each end).
- Electrolytic capacitors are typically polarized. This means that one leg needs to be connected to the ground side of the circuit and the other leg must be connected to power. If it is connected backwards, it won't work correctly.
- Electrolytic capacitors have the value written on them, typically represented in uF. They also mark the leg which connects to ground with a minus symbol (-). This capacitor is represented in a schematic as a side-by-side straight and curved line. The straight line represents the end which connects to power and the curve connected to ground.

Diodes

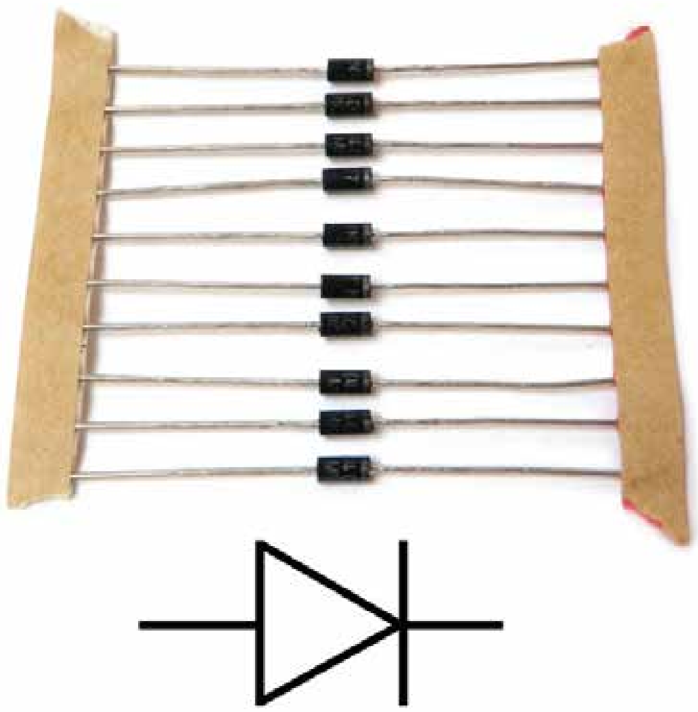


Figure 1.2.1 (G) Diodes

- Diodes are components which are polarized. They only allow electrical current to pass through them in one direction. This is useful in that it can be placed in a circuit to prevent electricity from flowing in the wrong direction.
- Another thing to keep in mind is that it requires energy to pass through a diode and this results in a drop of voltage. This is typically a loss of about 0.7V. This is important to keep in mind for later when we talk about a special form of diodes called LEDs.
- The ring found on one end of the diode indicates the side of the diode which connects to ground. This is the cathode. It then follows that the other side connects to power. This side is the anode.

Transistors

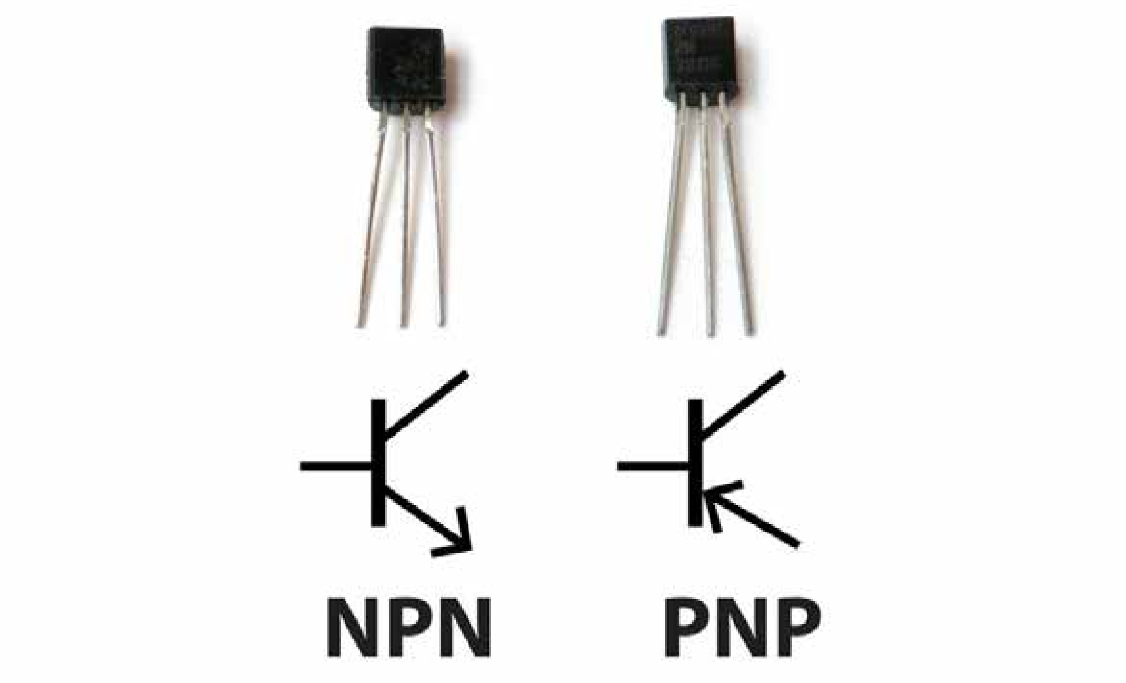


Figure 1.2.1 (H) Transistors

- A transistor takes in a small electrical current at its base pin and amplifies it such that a much larger current can pass between its collector and emitter pins.
- The amount of current that passes between these two pins is proportional to the voltage being applied at the base pin.
- There are two basic types of transistors, which are NPN and PNP. These transistors have opposite polarity between collector and emitter.
- NPN transistors allow electricity to pass from the collector pin to the emitter pin. They are represented in a schematic with a line for a base, a diagonal line connecting to the base, and a diagonal arrow pointing away from the base.
- PNP transistors allow electricity to pass from the emitter pin to the collector pin. They are represented in a schematic with a line for a base, a diagonal line connecting to the base, and a diagonal arrow pointing towards the base.

Integrated Circuits

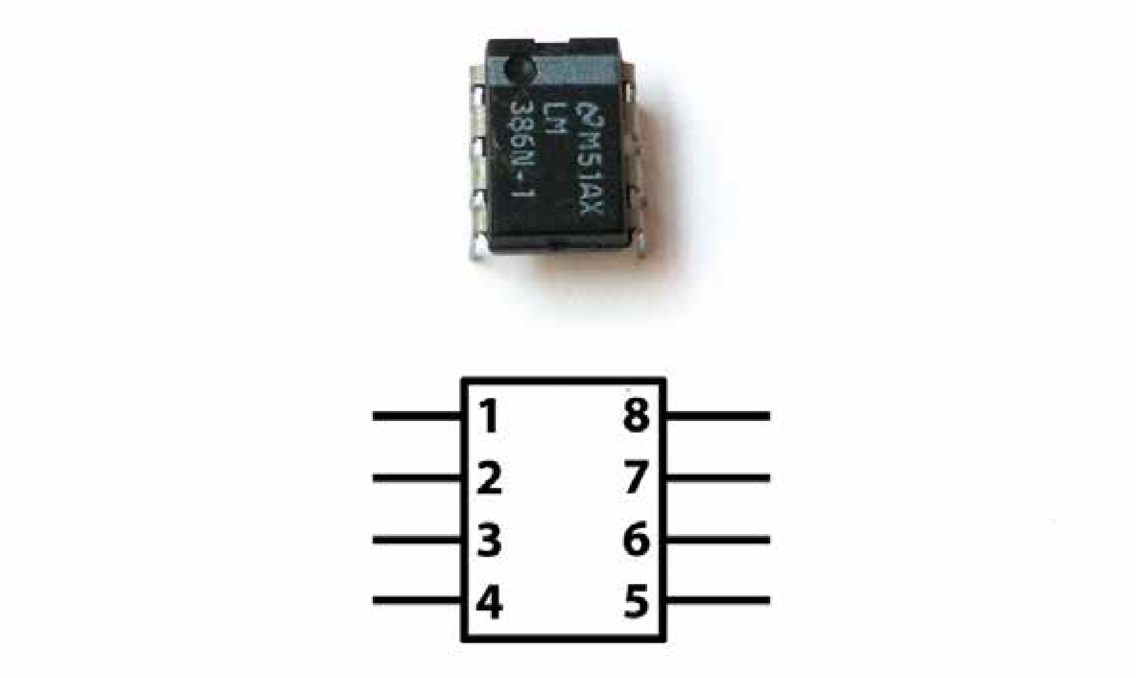


Figure 1.2.1 (I) Integrated circuit

- An integrated circuit is an entire specialized circuit that has been miniaturized and fit onto one small chip with each leg of the chip connecting to a point within the circuit.
- These miniaturized circuits typically consist of components such as transistors, resistors, and diodes.

Potentiometers

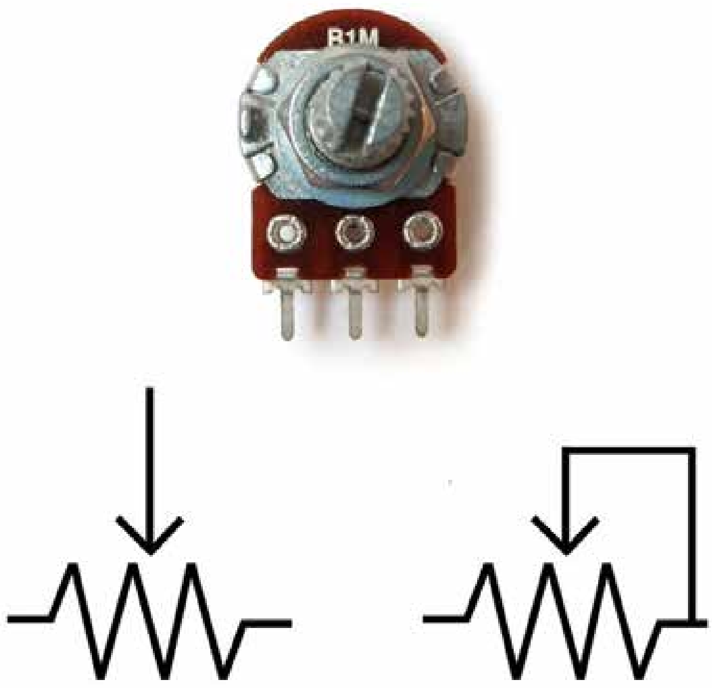


Figure 1.2.1 (J) Potentiometers

- Potentiometers are variable resistors. In plain English, they have some sort of knob or slider that you turn or push to change resistance in a circuit.

LEDs

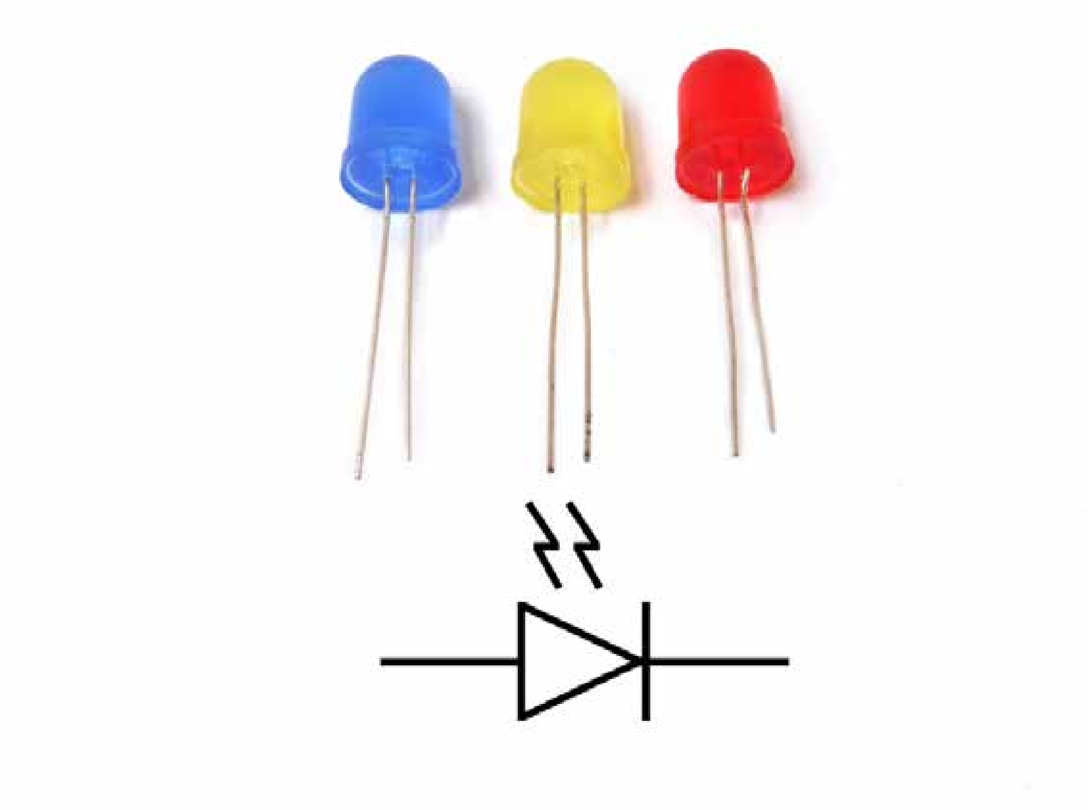


Figure 1.2.1 (K) Led

- LED stands for light emitting diode. It is basically a special type of diode that lights up when electricity passes through it.
- Like all diodes, the LED is polarized and electricity is only intended to pass through in one direction.

Switches

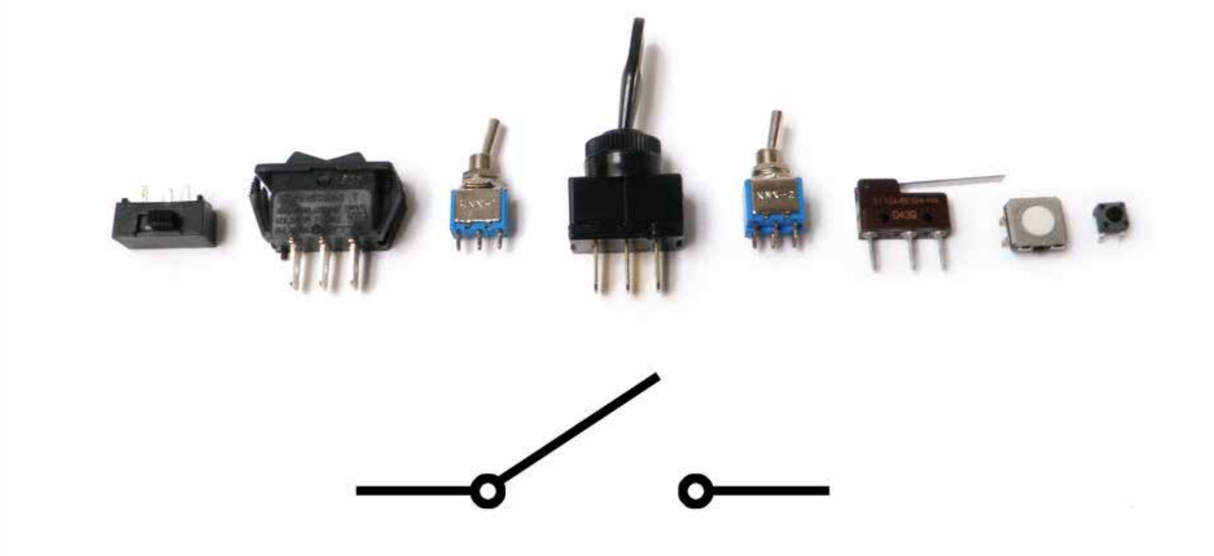


Figure 1.2.1 (L) Switches

- A switch is basically a mechanical device that creates a break in a circuit.
- When you activate the switch, it opens or closes the circuit. This is dependent on the type of switch it is.
- Normally open (N.O.) switches close the circuit when activated.
- Normally closed (N.C.) switches open the circuit when activated.
- As switches get more complex they can both open one connection and close another when activated. This type of switch is a single-pole double-throw switch (SPDT).

Batteries

Figure 1.2.1 (M) Battery

- A battery is a container which converts chemical energy into electricity.
- By placing batteries in series you are adding the voltage of each consecutive battery, but the current stays the same. For instance, a AA-battery is 1.5V. If you put 3 in series, it would add up to 4.5V. If you were to add a fourth in series, it would then become 6V.
- By placing batteries in parallel the voltage remains the same, but the amount of current available doubles. This is done much less frequently than placing batteries in series, and is usually only necessary when the circuit requires more current than a single series of batteries can offer.

Wire

Figure 1.2.1 (N) Wires

- Wires are nice because they allow you to connect things without adding virtually no resistance to the circuit.
- This allows you to be flexible as to where you place parts because you can connect them together later with wire.
- It also allows you to connect a part to multiple other parts.

Notes

Notes

Unit 1.3 Opportunities for purchase executives in electronic industry

Unit Objectives

By the end of this unit, participants will be able to:

1. Scope of purchase executives in electronic industry

1.3.1 Discuss the various opportunities for a Purchase Executive in the electronics industry

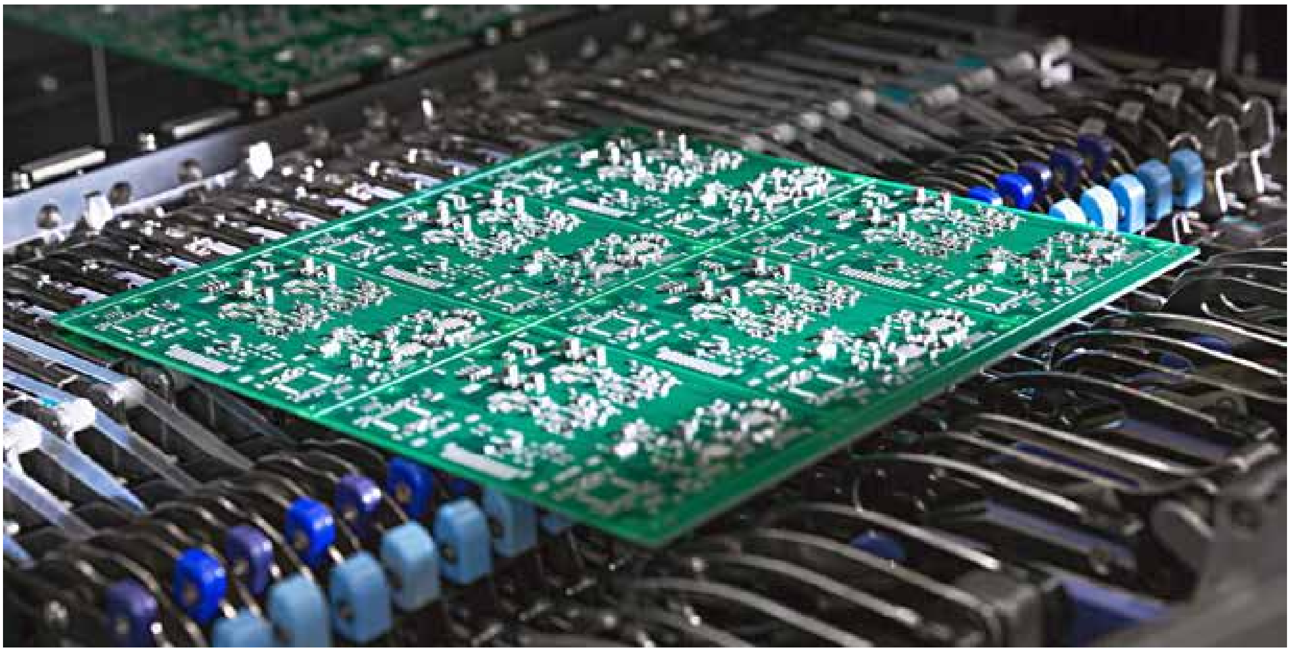


Figure 1.3.1 Electrical parts

The tasks of Purchase Executive is expected to perform include:

- Collecting information about the materials required by different departments
- Selecting the right supplier
- Purchasing materials of specified quality in a timely manner
- Maintaining optimum level of inventory Procuring materials at competitive prices

Expected Earning

For fresher's - INR 10,000 to INR 15,000 per month For candidates with experience - INR 18,000 to INR30,000 per month(These figures are indicative and subject to change).

1.3.2 Career Pathways

There are different career pathways that a Purchase Executive can take. Following are some of them:

- In the Electronic industry or other related sectors where materials are purchased. The individual can work as an employee with such a company.
- With appropriate knowledge and adequate years of experience, the individual may also become a Senior Executive.
- Later, the individual may progress to a manager's level.
- The person can even work as an entrepreneur.
- Similarly, with strong technical expertise in different types of purchase, one can even become a trainer at a training institute or start own training centre

.

Notes

Notes

Unit 1.4 Roles and responsibilities of a purchase executive

Unit Objectives

By the end of this unit, participants will be able to:

1. Scope of purchase executives in electronic industry

Discuss the role and responsibilities of a Purchase Executive

Figure 1.4 Purchase Executive

1.4.1 Responsibilities

- Research potential vendors
- Compare and evaluate offers from suppliers
- Negotiate contract terms of agreement and pricing
- Track orders and ensure timely delivery
- Review quality of purchased products
- Enter order details (e.g. vendors, quantities, prices) into internal databases
- Maintain updated records of purchased products, delivery information and invoices
- Prepare reports on purchases, including cost analyses
- Monitor stock levels and place orders as needed
- Coordinate with warehouse staff to ensure proper storage
- Attend trade shows and exhibitions to stay up-to-date with industry trends

1.4.2 Requirements and skills

- Proven work experience as a Purchasing Officer, Purchasing Agent or similar role
- Good knowledge of vendor sourcing practices (researching, evaluating and liaising with vendors)
- Hands-on experience with purchasing software (e.g. Procurify or SpendMap)
- Understanding of supply chain procedures
- Solid analytical skills, with the ability to create financial reports and conduct cost analyses
- Negotiation skills

1.4.3. In addition, the individual has the following responsibilities:

- Communicating effectively at the workplace.
- Working effectively.
- Maintaining and enhancing professional competence.
- Working in a disciplined and ethical manner.
- Upholding social diversity in the workplace.
- Dealing with workplace hazards.
- Following fire safety practices.
- Following emergencies, rescue and first-aid procedures.
- Following effective waste management/recycling practices.

1.4.4 Discuss organisational policies on incentives, delivery standards, personnel management and public relations (PR).

The organizational policies on incentives, personnel management, and reporting structure depend on the organization the individual joins. These vary across organizations.

For example, a public sector company may offer different kinds of incentives for work performance as compared to a private company. The same is the case with the reporting structure.

Personnel management policies also tend to differ from organization to organization. The individual should conduct proper research before interviewing for a job at a particular company to ensure that they are satisfied with the company policies on remuneration, human resource management, career progression, etc.

Electrical equipment industry facing skilled manpower problem

- It said that the electrical equipment industry is facing a major problem in getting skilled and employable manpower which is technically competent, equipped with skills and ready to be deployed.
- "The industry is facing a looming skill gap, which is widening every year. Due to lack of skilled manpower, electrical equipment industry is suffering as it is affecting critical functions like R&D, consultancy, design and detailed engineering work," it added.
- The technical education system in the country does not promote innovative thinking, it said adding training being provided in the ITIs is out dated and the students are not able to meet the aspirations of the industry.
- "Even the qualified supervisors and engineers are not available. Those who are qualified are not well trained to meet the technical needs of the industry. Because of the above factors the labour productivity in India is far less than the labour productivity in China and Korea," the statement said.
- It said that this is one of the important reasons for making the industry non-competitive and is also affecting the timely completion of the projects.
- The ministry said that there is an urgent need for training the work force for all the segments of the industry and making changes in the curriculum of the polytechnics and engineering colleges.

EXERCISE

Short Questions

1. Explain the importance of the electronics industry.
2. Write about purchase executive.
3. Explain briefly the problems faced by electronics industry.
4. Write short notes on followings:
   - Wire
   - Switches
   - Potentiometers
   - Integrated Circuits
   - Transistors
   - Diodes
   - Capacitors
   - Electrical Signals

Long Questions

1. Describe the size and scope of the electronics industry and its various sub- sectors.
2. Discuss the various opportunities for a Purchase Executive in the electronics industry.
3. Define the basics of electronics and related concepts.
4. Discuss the role and responsibilities of a Purchase Executive.
5. Discuss organisational policies on incentives, delivery standards, personnel management and public relations (PR).

Notes

QR Code

Scan the QR code below to access the ebook

https://www.youtube.com/watch?v=A8LSc2GXn9E
1.1.1 Describe the size and scope of the electronics industry and its various sub- sectors

https://www.youtube.com/watch?v=4sBgu_tUpil
1.2.1 Define the basics of electronics and related concepts

https://www.youtube.com/watch?v=Vy9lQ65j6H4
1.3.2 Career Pathways

https://www.youtube.com/watch?v=W8B2vhd-ThU
1.4.1 Responsibilities

Skill India
कौशल भारत-कुशल भारत

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

N·S·D·C
National
Skill Development
Corporation
Transforming the skill landscape

ESSCI
Skilling India in Electronics

2. Collect Information about Materials and Suppliers

ELE/N7703

Key Learning Outcomes

By the end of this module, participants will be able to:

- Describe purchasing and procurement practices.
- Evaluate suppliers.
- Prepare a budget as per purchase requirements.

Unit 2.1 Process to collect list of required materials from all departments

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand process of collecting list of purchase from all departments.

2.1.1 Describe the process to collect list of required materials from all departments Bill of Materials

- A bill of materials (BOM) is a comprehensive list of parts, items, assemblies, subassemblies, intermediate assemblies, documents, drawings, and other materials required to create a product. The BOM can be thought of as the recipe used to create a finished product, presented in a hierarchical format. Depending on the product, it may include mechanical (hardware), electrical (e.g., ICs, PCBAs), software, and related documents and drawings.

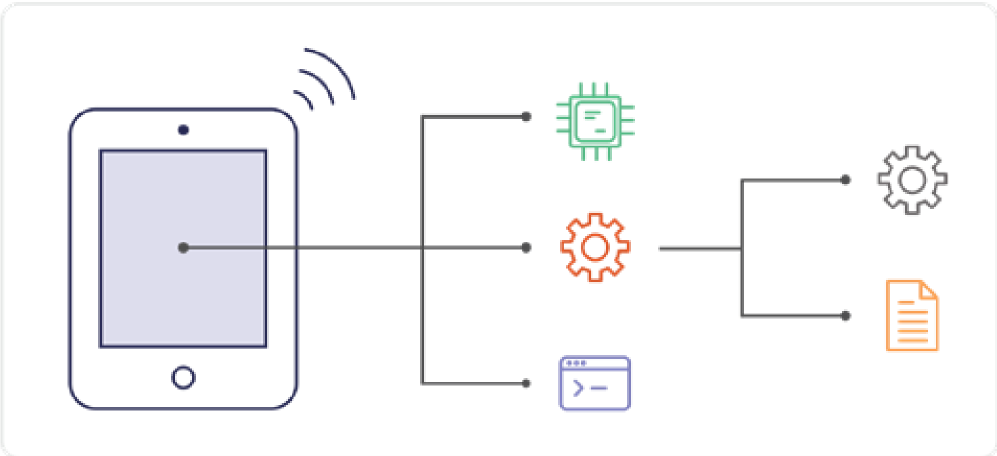


Figure 2.1 BOM Process

- The bill of materials and associated records describe the materials required to source and build an assembly. All manufacturers building products, regardless of their industry, get started by creating a bill of materials (BOM).
- Because the bill of materials pulls together all sorts of product information, it is common that several disciplines (design and engineering, document management, operations, manufacturing, purchasing, contract manufacturers, and more) will collaborate on the product information contained within the BOM to enable accurate production. Furthermore, engineering teams will create engineering bill of materials (EBOMS) and the manufacturing teams will rely on manufacturing bill of materials (MBOMS).
- The BOM helps guide positive results as products evolved from design, through development, and ultimately volume production—so it is critical to create and share an accurate and up-to-date version of the BOM with all teams. And for companies that rely on supply chain partners, it's important to provide effective revision control throughout the new product development and introduction (NPDI) process. Any time the BOM is shared with a contract manufacturer (CM) or supplier, it should be the latest released revision to prevent unnecessary production mistakes and product launch delays.

Effective bill of materials

Because one of the main functions of the BOM is to ensure that the product is built right, it is best to include specific pieces of product data in the BOM record. Whether you are creating your first bill of materials or are looking for ways to improve how you create a bill of materials, here is a high-level list of information to include in your BOM record:

- **BOM Level**—Assign each part or assembly a number to detail where it fits in the hierarchy of the BOM. This allows anyone with an understanding of the BOM structure to quickly decipher the BOM.
- **Part Number**—Assign a part number to each part or assembly in order to reference and identify parts quickly. It is common for manufacturers to choose either an intelligent or non-intelligent part numbering scheme. Whichever scheme you use, make sure you avoid creating multiple part numbers for the same part.
- **Part Name**—Record the unique name of each part or assembly. This will help you identify parts more easily.
- **Phase**—Record what stage each part is at in its lifecycle. For parts in production, it is common to use a term like 'In Production' to indicate the stage of the part. New parts that have not yet been approved can be classified as 'Unreleased' or 'In Design'. This is helpful during new product introduction (NPI) because it allows you to easily track progress and create realistic project timelines.
- **Description**—Provide a detailed description of each part that will help you and others distinguish between similar parts and identify specific parts more easily.
- **Quantity**—Record the number of parts to be used in each assembly or subassembly to help guide purchasing and manufacturing decisions and activities.
- **Unit of Measure**—Classify the measurement in which a part will be used or purchased. It is common to use 'each', but standard measures like inches, feet, ounces, and drops are also suitable classifications. Be consistent across all similar part types because the information will help make sure the right quantities are procured and delivered to the production line.
- **Procurement Type**—Document how each part is purchased or made (i.e. off-the-shelf or made-to-specification) to create efficiencies in manufacturing, planning, and procurement activities.
- **Reference Designators**—If your product contains printed circuit board assemblies (PCBAs), you should include reference designators that detail where the part fits on the board in your BOM. Capturing this information in the BOM can save time and help you avoid confusion down the road.
- **BOM Notes**—Capture other relevant notes to keep everyone who interacts with your BOM on the same page.

Questions you must answer before creating a bill of materials

1. **Will you document consumables in your BOM record?** Many manufacturers second-guess the decision to include glue, wires, fasteners, and other non-modeled parts like labels and boxes in their BOM record. But if the part does not make it into your BOM, it might not make it into your product. So take the time to document these parts.
2. **How will you attach files to your BOM record?** As you create your BOM, keep records of supporting documentation like CAD drawings and work instructions. It is critical to link these files with their specific component found at the appropriate level of the BOM to avoid confusion, quality issues, and manufacturing scrap and rework.
3. **Who is going to use the BOM record?** It is important to include as many details as possible in your BOM. You may never interact face-to-face with some of the people utilizing your BOM, so it should convey all the information they might need throughout the product's lifecycle.
4. **How will you reconcile your BOM record?** Your BOM record may go through several iterations during the design phase. Make sure you can easily compare past and present revisions of the BOM to highlight what has changed. You should also be able to easily traverse up or down the indented bill of materials to see all components and subassemblies and how they fit together. And, you should be able to see what BOM changes were created by specific, linked engineering change orders (ECOs). This allows you to review who and when changes were approved.

Notes

Notes

Unit 2.2 Procedure for approval of the purchase requirements

Unit Objectives

By the end of this unit, participants will be able to:

1. Process of getting approval of purchase

Discuss the procedure for approval of the purchase requirements from concerned authorities

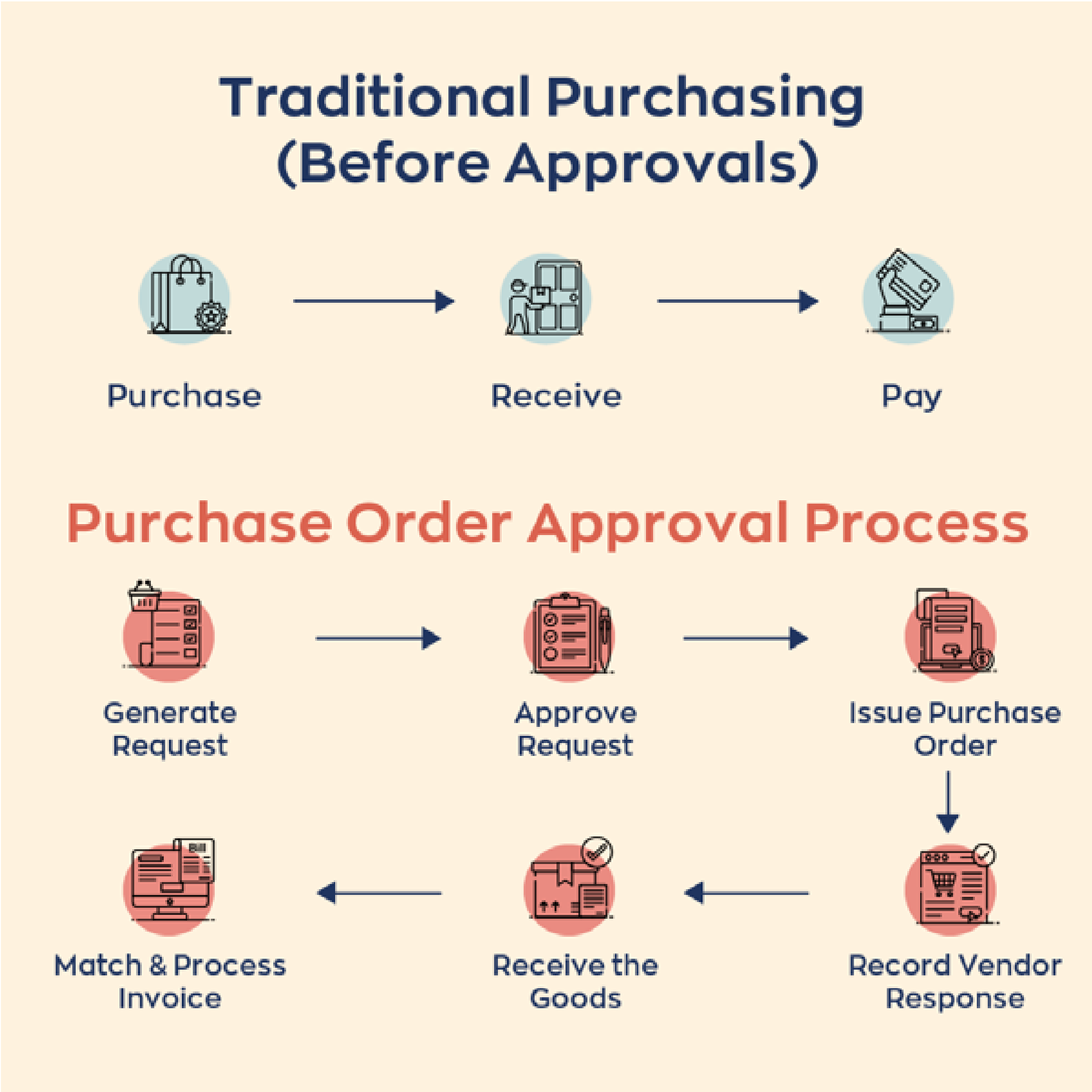


Figure 2.2 Purchase approval process

Step 1: Generate the Request

The purchase order process starts when an employee or department requires specific goods or services. This initiates the purchase requisition process, where the employee creates a purchase requisition that details what items are needed, the desired vendor, the cost of the items, when the items are needed, and where the items are to be delivered.

Some companies may also require the employee to justify the purchase – that is, state how the items will be used. This request can be on paper or electronic form. (For certain items, you may also need to generate a request for quote, or RFQ, to determine the best vendor and the lowest price.)

Step 2: Approve the Request

The original employee now sends the purchase requisition to the person designated for PO approvals. It may be the employee's manager or someone higher up in the chain. If the request is approved, you move onto the next step in the process.

Step 3: Issue the Purchase Order

An approved purchase requisition is now converted into an official purchase order, which has its own unique number for tracking purposes. The PO is then transmitted to the designated vendor.

Step 4: Record Vendor Response

When the vendor receives the purchase order, they typically notify you of its receipt and let you know when you should receive the goods. Note that when the vendor accepts your PO, that creates a legally binding contract for both parties.

Step 5: Receive the Goods

Time goes by and the shipment finally arrives. One of your employees checks the shipment against the packing slip and then acknowledges receipt. If something's missing, damaged in shipment, or not as ordered, your employee can notify the vendor. Otherwise, the goods are sent to the employee or department that ordered them.

Step 6: Match and Process the Invoice

Receiving what you ordered isn't the end of the process. The vendor now sends your company an invoice for that order, which is received by your purchasing or accounts payable (AP) department. Your staff now performs what is called three-way matching. According to Accounting Tools, three-way matching uses three documents: the original purchase order, the vendor's invoice, and the packing slip or other receiving report – to ensure that the items received match the items ordered. If everything matches, the accounts payable department pays the vendor, per the agreed-upon terms. If something's off, then further discussions with the vendor are in order.

Notes

Notes

Unit 2.3 Different methods for collecting information about various manufacturers and suppliers

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand information about suppliers.

Describe the various methods for collecting information about various manufacturers and suppliers

First, you should determine what type of supplier you're looking for. This will help determine the terminology you need to use in your research.

- There are several options, the most common being:
  - A manufacturer to produce your own product idea.
  - A supplier (who may also be a manufacturer), wholesaler or distributor to purchase already-existing brands and products.
  - A drop shipper to supply products and fulfill orders of already-existing brands and products.
- Domestic vs. overseas suppliers

When looking for suppliers if you plan to manufacture or wholesale, you'll need to decide whether you want to source domestically or from overseas. Overseas can refer to any location abroad.

Domestic sourcing

Advantages

- Higher manufacturing quality and labor standards.
- Easier communication with no language barrier.
- Marketing appeal of being made in North America.
- Easier to verify reputable manufacturers.
- Faster shipping time.
- High intellectual property right protection.
- Greater payment security and recourse.

Disadvantages

- Higher manufacturing costs.
- Less product choice (there are many items that just aren't made in North America anymore).

Overseas sourcing

Advantages

- Lower manufacturing costs.
- High number of manufacturers to choose from.
- One-stop services like Alibaba have made it easy to navigate suppliers.

Disadvantages

- Lower perceived quality from customers.
- (Usually) lower manufacturing and labor standards.
- Little intellectual property protection.
- Language, communication and time zone barriers can be difficult to navigate.
- Difficult/costly to verify manufacturer and visit on-site.
- Longer shipping time.
- Cultural differences in business practices.
- Product importation and customs clearance.
- Less payment security and recourse.

➢ **Where to begin your search for a manufacturer**

Now that you have a better idea of exactly what you're looking for, as well as the advantages and disadvantages of domestic vs. overseas sourcing, where do you begin your search? Naturally, the internet is the best place to start, but there are a few places in particular that can help with your search:

- Directories
- Google
- Local Library
- Referrals

Notes

Notes

Unit 2.4 Comparison of suppliers

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand the process to select suppliers

Explain how to compare the pricing details, specifications (quotations), payment terms, delivery time etc. received from different suppliers

Competitive quality, cost, service, and delivery have always been fundamental requirements of suppliers.

Criteria for selecting a supplier

Suppliers play a critical role in helping companies succeed. In order to find the right ones, businesses need to consider a number of **critical factors**, including:

- Price
- Value for money
- Quality
- Reliability
- Responsiveness
- Flexibility

Shared culture and location can also play a key role in a successful partnership. Effective purchasing should focus on what your business needs and what you want to achieve.

Value for money

If you are a start-up, a key consideration in choosing a supplier may be affordability. However, cheap suppliers don't always represent the best value for money. If you want reliability and quality from your suppliers, you'll have to decide how much you're willing to pay for your supplies. It is important to strike a balance between cost, reliability, quality and service.

Quality and reliability

The quality of your supplies needs to be consistent - your customers associate poor quality with you, not your suppliers. Equally, if your supplier lets you down with a late delivery or faulty supplies, you may let your customer down.

Speed and flexibility

Being able to place frequent, small orders lets you avoid tying up too much working capital in stock. Flexible suppliers help you respond quickly to changing customer demands and sudden emergencies. If you want to cut down the time it takes you to serve your customers, suppliers that offer you a quick delivery service will rate higher than those that compete on other factors - for example, on price alone.

Strong service and clear communication

Communication is important in ensuring a good working relationship with your supplier. From the initial briefing, through continual feedback and routine meetings, your supplier should communicate openly and regularly. You need your suppliers to deliver on time, or to be honest and give you plenty of warning if they can't.

Financial stability

It's always worth making sure your supplier has sufficiently strong cash flow to deliver what you want, when you need it. A credit check will help reassure you that they won't go out of business when you need them most.

Notes

Notes

Unit 2.5 Organizational policies related to inventory, quality, and vendors

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand organizational policy regarding materials.

Discuss the organizational policies related to inventory, quality, and vendors that purchase executives need to follow

- A company's inventory management policies determine how the company manages the movement of inventory under its control. Every company has a different philosophy on inventory management that guides how and why it sets certain policies.
- Inventory stock holding policy helps ensure that the company is clearing inventory stock as efficiently as possible.
- Certain key factors, such as the type of product handled, product cost and lead time for distribution, can determine the best types of inventory strategies needed for optimal inventory control.

Product Type

Type of product is one of the most salient factors affecting inventory control policy. For example, products with short shelf lives, such as perishable foods, require a different priority and policy than men's dress shirts. Short shelf life products must rotate based on expiration date. Although it seems like a first in/first out (FIFO) policy works in this case, if at any time goods come into the warehouse out of expiration date sequence, a FIFO policy will fail to manage the inventory properly.

Product Cost

Many companies employ additional inventory control policies for high-value products.

Along with having the products caged, most companies require a signature from authorized personnel before high-value products move from one location within a facility to another. Depending on the value of the product, a security guard may accompany the movement or transfer.

Lead Time

A major factor that affects inventory control policies is product lead time – the time from receipt of an order to the time of delivery. Lead time has changed in many industries.

The short lead time reduced the amount of inventory the retailer needed to carry because he could get more within a fairly short notice. When production moved overseas, the lead time increased from two to four weeks to 90 to 120 days. This completely changed the retailer's inventory management policies. He now has to warehouse more inventory because of the increased lead time.

Cost Considerations

Industries and products with extraordinarily long lead times incur added costs such as utilities and other overhead costs. A higher inventory volume increases the workload associated with managing the inventory, such as cycle counting, yearly physical inventory and general warehouse maintenance. Well-designed inventory management policies are crucial to an organization's bottom line because inventory is such a large part of a company's operating capital.

Notes

Notes

Unit 2.6 Ways to identify and resolve common problems such as duplicate Products, unavailability of some products etc.

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand duplicate product.

Explain the ways to identify and resolve common problems such as duplicate products, unavailability of some products etc.

- **Unreal discounts**

  If you buy something, especially online, at a fraction of the price, or the deal is too good to be true, it usually is. Know how much discount is typically available on branded or luxury items and if the offer is unrealistically low, say, 70-80% of the MRP, then you are definitely buying a fake.

- **Flimsy packaging**

  This is a dead giveaway as good brands and businesses take a lot of care and spend a lot of money on packaging. If the item is shabbily packed, doesn't fit properly in the box, uses substandard material like cheap plastic or sagging cardboard, take it as a sign of counterfeiting. Similarly, if you get a product without any packaging at all, know it to be a fake.

- **Grammatical & spelling mistakes**

  Counterfeit products can be easily identified through wrong spelling (an extra or a missing letter) or grammatical errors. While these mistakes in brand names are deliberate to lure the careless customer, those in the product information or instruction manual reflect the fraudsters' lack of education.

- **Fake websites**

  If you are shopping online, one easy way to counter the purchase of fake items is to check the authenticity of websites. If the site is fake, so are the products. Confirm the URL and ensure that the site is safe by looking for 'https' (instead of http) and the lock sign. You can also verify the site's authenticity by pasting the website address on www.scamadviser.com and http://whois. domaintools.com/. These let you know whether it's a reliable site.

- **Poor quality of products**

  The quality of counterfeit products is usually suspect, with cheap alternatives used in place of the original. The material can be tacky plastic, fake leather, cheap glass, poor quality cloth, old or used parts in electronic appliances and gadgets. Even the shape of the containers can be slightly different. If the product has a course, used feel to it, do not buy it.

- **Omissions & mismatch**

  The company prints several features like codes, serial or model numbers, trademark, and patent information on the package or product. Typically, fake products miss out on a few details while copying the information. You can also crosscheck the numbers with the original products online, especially for electronic items or appliances.

- **Flawed fonts, logos**

  Much like the spellings, it is easy to detect fake logos, brand names and trademarks, if you are paying attention. If you are observant and know the original logos well, you can catch even the smallest variation. If this is difficult for you, take a picture of the product you think is fake, and compare it with the original online. The font could be slightly different or of the wrong size. Even the coloring could be faded or altered minutely from the original.

- **No contact details**

  If the manufacturer's physical address, e-mail, phone number or contact details are not listed on the product or package, it should be cause for concern. This implies you have no means of contacting anyone for grievance redressal. It is best to avoid such products. If the contact details are mentioned, try to verify these on the website or call to confirm before you make a purchase.

- **Missing accessories**

  Make sure that all the supplementary parts and accessories that have been mentioned on the package are present in the box. If the instruction manual, warranty card, wires, plugs or other items are missing, get back to the retailer immediately. Better still, open the box and check it in the store before buying. In case of an online purchase, make a video recording of the unboxing while taking delivery.

Unauthorised centres

it's best to buy electronic items, appliances, gadgets and branded ware from authorised retailers, licensed sellers and genuine brand outlets. If you are getting a good discount elsewhere, check the store's address by going online and make sure you have genuine contact details.

Unit 2.7 Statutory and regulatory requirements for import and export of materials

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand Govt. regulation regarding import and export.

Explain the statutory and regulatory requirements for import and export of materials

The Government of India recently took some steps to make 'Ease of Business' a more streamlined process. One of the steps was to reduce the number of documents required for import-export. Now, the number of documents you are required to submit for an IEC number is three.

Import Export Code (IEC)

Since there are different goods imported from various nations, it becomes a challenge to have a proper set of documents in the import/export customs liberty methodology. Furthermore, different countries have their own laws, resulting in a variety of methods and customs for approving imports. Every item under import and export is ordered under a code number acknowledged internationally, which is called the IEC number. Notably, the IEC number today is your company's Permanent Account Number (PAN), although people who had applied for an IEC number earlier are allowed to use the old code since the IEC number is valid for life. There may be mutual import/export agreements between the legislatures of various nations. Imports and exports from such nations may have exceptions on documentation for import and export clearance.

Legal Documents Required

The three legal documents required to complete import customs procedures are.

1. Bill of entry

The bill of entry is one of the significant documents for import customs permission. As clarified already, the bill of entry is the legal report to be recorded by a CHA (Customs House Agent).

- The bill of entry is one of the pointers of 'absolute outward settlement of nations'. It is managed by the Reserve Bank of India and the Customs Office
- The bill of entry must be documented within 30 days of the influx of merchandise at a customs office
- After filling the bill of entry alongside essential import customs document clearance, evaluation, and assessment of products are completed by the concerned customs officers
- After import customs paperwork is completed, a **'pass out the order'** is given under the bill of entry
- When a shipper or their approved customs house operator gets a **'pass out the order'** from concerned officials, the imported merchandise can be moved out of customs
- The goods can be removed from customs territory to the shipper's location after paying basic import charges.

2. Commercial invoice and packing list

- The invoice is the most important document in any business dealings
- The receipt is one of the documents required for import customs leeway for value examination by concerned customs officials
- Computable value is determined based on the terms of conveyance of merchandise referenced in the business receipt delivered by the shipper at the customs area
- The concerned evaluating official checks that the amount referenced in the business receipt matches the genuine market estimation of the same merchandise
- This strategy for assessment by evaluating officials of customs avoids false exercises of shippers or exporters such as over-invoicing or under-invoicing
- So, the invoice assumes an important job in value evaluation in import customs clearance.

3. Bill of lading / airway bill

The bill of lading or airway bill is one of the most important documents required for import customs clearance.

- The bill of lading under maritime shipment or airway bill under aircraft shipment is a transporter's document required to be submitted with customs for import customs approval
- Moreover, the bill of lading or airway bill provided via the bearer furnishes the details of freight with terms of the conveying.

Other Required Documents

Other than the above 3 compulsory documents, below are a few of the common documents to be submitted

1. Import License

Import permits might be required as one of the documents for import customs leeway techniques, as well as rules and regulations under explicit items. According to government regulations, this permit may be needed for bringing in specific merchandise. The government may have controlled the import of specific objects from time to time. Along these lines, the administration demands an import permit as one of the documents required for import customs permission to bring those materials from overseas.

2. Insurance Certificate

An insurance certificate is required for import customs clearance systems. However, it is a supporting document against the trader's presentation in terms of the conveyance.

- The insurance certificate under import consignment encourages customs specialists to confirm, with regards to the selling cost, whether protection is required or not
- This is required to discover an assessable amount that decides the import duty sum
- A purchase order envelops practically all the terms and conditions of a sale agreement, which empowers the customs authority to accept the given appraisal
- In case import relegation is under the premise of a letter of credit, the shipper can present a duplicate of letter of credit alongside the documents for import approval.

Domestic sourcing

3. Technical Write Up

The technical write up is considered as one of the records for import clearance under some explicit products.

This document encourages a customs authority to infer the precise market estimation of such imported equipment, thus helping for value evaluation.

4. Industrial license

A copy of an industrial license might be necessary when importing certain specified merchandise. If an importer is able to guarantee some import advantage under government guidelines, an industrial license may be created to benefit from the advantage. In this situation, a copy of the industrial permit may be sent to customs.

5. Registration cum membership certificate

To benefit from import duty exemptions from government offices with regards to certain specific merchandise, the generation of an RCMC with customs specialists is one of the prerequisites for import clearance. Indeed, in such cases, the merchant needs to provide a registration cum membership certificate alongside import customs approval archives.

6. GATT/DGFT Declaration

Each merchant needs to record GATT and DGFT statements alongside other import customs clearance reports with customs. Moreover, the GATT presentation must be recorded by the importer according to the conditions of the general agreement on tariffs and trade.

Other than the documents mentioned above, the importer/exporter must file any additional documents required. It should be by the government or customs department when importing restricted supplies.

Notes

Notes

Unit 2.8 Various software used to record purchase requirements

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand software requirement for purchase.

List the various software used to record purchase requirements

- **Promena Strategic Procurement Platform**

  A Strategic Procurement Platform, Promena was founded in 2001 with the partnership of Koç Holding and The Carlyle Group to provide companies with the top-flight of efficiency, active control, cost, time & labor savings in their procurement processes, integrating global and regional market knowledge with hi-tech.

- **Zahara**

  Zahara's cloud based platform automates budget management, suppliers, purchase requisitions, multi-level purchase approvals, deliveries and invoice reconciliation and approvals. Zahara integrates with most leading accounting software such as QuickBooks Online and Xero to give expanding SME's real time visibility and centralized control of their purchasing.

- **Pipefy**

  Pipefy is the workflow management software that makes business processes—such as purchasing, job opening, accounts payable and employee onboarding—hassle-free, so requesters, processors and managers are more efficient. Through fast-to-deploy, no-code, automated workflows, Pipefy enhances speed, increases visibility, and delivers higher quality outcomes without the need of IT.

- **Unleashed Software**

  Make inventory management easier and more efficient with Unleashed Software. The easiest, cloud-based platform for inventory management, Unleashed helps businesses take control of inventory health and get visibility on all inventory management processes. It also offers seamless integrations with various ecommerce, finance and other software solutions.

- **Team Procure**

  Team Procure is a cloud-based procurement solution. Our software is easy to use and can be customized to the needs of your business. We support a streamlined procurement workflow that allows you to manage your internal purchase requests as well as your entire supply chain in a single platform.

- **Prodoge**

  Prodoge is a platform for global business and payments. Anyone with the Prodoge mobile app can get started sending payments, promoting their business, and selling their goods & services in under a minute to anyone in the world. Prodoge helps buyers, sellers, friends, and family connect globally, send money, and grow their business.

- **Snap Accounts Payable Corporation**

  SnapAP is a cloud-based accounts payable solution that enables organizations to digitize their complete Procure-to-Pay workflow. With SnapAP, users can handle all invoices, whether they are covered by a purchase order or not. SnapAP also serves as a communication platform including buyers, suppliers, AP, finance and payables in the process.

- **Tradogram Inc**

  Tradogram is an all-in-one procurement management software. Used worldwide by businesses to track their spending and manage their entire purchasing process. Trusted by procurement and finance teams for real-time visibility into data and streamlining workflows to provide insight into spending, users have reported 3X better efficiency and an average of 20% cost savings!

- **Precoro**

  Gain overall control and visibility of your procurement workflow with a holistic cloud-based solution. Transform your time-consuming procurement operations into convenient and automated procedures. Document creation just in a few clicks. With Precoro, your approvals will be 2,5x faster, and the need for manual data entry will reduce by 80%.

- **BlueSnap**

  BlueSnap's All-in-One Accounts Receivable Automation solution, formerly Armatic, is the highest rated software solution for Payment Processing, Billing/Invoicing, Recurring Billing and Subscription Management. Billing and Invoicing: Create beautiful invoices with our powerful invoice editor synced into your accounting system.

Notes

Notes

Unit 2.9 The importance of documentation in Purchase

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand importance of purchase documents.

Explain the importance of documentation in the whole process

- Procurement and contract records are important because they serve as an audit trail of how the process was carried out.
- Procurement and contract records are the evidence of all actions taken to award contracts, and of the results of the monitoring and oversight of contract implementation sverige-ed.com.
- Procurement and contract records are the basis for internal and external audits, and are needed to determine compliance with the procurement legal and institutional framework.
- Maintaining procurement and contract records should be mandated by law given the use of public funds and the need for transparency and accountability.

EXERCISE

Short Questions

1. What is BOM?
2. Explain purchase process.
3. Explain benefits of overseas suppliers.
4. Write about duplicate product.
5. Explain importance of software in purchase requirements.

Long Questions

1. Describe the process to collect list of required materials from all departments.
2. Discuss the procedure for approval of the purchase requirements from concerned authorities.
3. Describe the various methods for collecting information about various manufacturers and suppliers.
4. Explain how to compare the pricing details, specifications (quotations), payment terms, delivery time etc. received from different suppliers.
5. Discuss the organizational policies related to inventory, quality, and vendors that purchase executives need to follow.
6. Explain the ways to identify and resolve common problems such as duplicate products, unavailability of some products etc.
7. Explain the statutory and regulatory requirements for import and export of materials
8. List the various software used to record purchase requirements.
9. Explain the importance of documentation in the whole process.

Notes

QR Code

Scan the QR code below to access the ebook

https://www.youtube.com/watch?v=8kzXMXcP3Rs
2.1 Process to collect list of required materials from all departments

https://www.youtube.com/watch?v=IKALvTPCO_k
2.2 Procedure for approval of the purchase requirements

https://www.youtube.com/watch?v=L05VyO_q7CU
2.3 Different methods for collecting information about various manufacturers and suppliers

https://www.youtube.com/watch?v=ZSdp-8D4Rdo
2.3 Different methods for collecting information about various manufacturers and suppliers

https://www.youtube.com/watch?v=eoWZoI1AKEk
2.4 Explain how to compare the pricing details, specifications (quotations), payment terms, delivery time etc. received from different suppliers

Skill India
कौशल भारत - कुशल भारत

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

N·S·D·C
National
Skill Development
Corporation
Transforming the skill landscape

ESSCI
Skilling India in Electronics

3. Issue Purchase Order and Receive Supplies

Unit 3.1 Explain the process of approving the purchase order
Unit 3.2 Receiving and Inspection of Material and Return
Unit 3.3 Industry set standards and guidelines for purchasing materials

ELE/N7705

Key Learning Outcomes

By the end of this module, participants will be able to:

- Prepare a purchase order.
- Receive and return materials from the supplier.

Unit 3.1 Explain the process of approving the purchase order

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand purchase order

Explain the process of approving the purchase order from the authorized department/personnel

- Purchase order approvals refer to the entire process commencing from the time a PO is created for approval, till the time it is accepted by the vendor. Only a proper purchase order that is approved internally as well as accepted by the vendor is termed as a legally binding contract for both the buyer and the supplier.
- Purchase orders are an integral part of a procurement process and can help an organization streamline workflows and meet its business needs effectively. PO approvals ensure that business needs are met on time, good vendor relationships are maintained, and other processes such as invoice matching & invoice processing are easily integrated for better business efficiency.

The PO Approval Workflow

PO approvals may be done differently depending on the size of an organization. Though specifics can vary, the general purchase order approval process has a series of steps that remain similar between organizations. The process is usually as follows:

1. **Identifying requirements and raising requests -** The basis of a purchase order approval process starts with a product or service requirement. Once the need is identified, the concerned department raises a procurement request to the purchasing department.
2. **Review purchase requests and pick suppliers -** The purchase department reviews the raised request for validity and starts with the process of identifying the right suppliers. Supplier selection may be carried out by raising a Request for Proposal (RFP).
3. **Purchase authorization -** This step can involve one or more levels of authorization depending on the size of the purchase requests. While small purchase requests may be authorized by the purchase manager, highly-priced purchase requests need to be verified against budgets and may involve PO approvals from senior management levels. Requests can even be rejected if they are not considered necessary, are not within budget limits, or lack proper information.
4. **Purchase order preparation -** As soon as the purchase request is given the go-ahead, the PO is prepared by the purchase department. The PO can contain details including the buyer and vendor information, PO number, product specifications, delivery terms, and payment information. Once the PO is complete and ready, it is sent to the vendor for acceptance.
5. **Vendor's assessment of the PO -** The vendor upon receipt of the PO, checks for outstanding dues if it is an existing buyer. For new customers, a detailed scrutiny of the buyer's payment capacity is done.
6. **Vendor Acknowledgement of the PO -** If the PO information is correct, then the supplier approves it by signing the document. The PO then becomes valid and is deemed to be a legal contract between the buyer and the seller.

Notes

Notes

Unit 3.2 Receiving and Inspection of Material and Return

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand factors while receiving materials
2. Inspection and Return of Material

Describe the factors to be considered while preparing the receiving area

The receiving department performs the following functions:

(i) Receives, unloads, and unpacks materials.

(ii) Checks whether packages and their contents are intact.

(iii) Verifies the quality, quantity, and other features of materials, ensuring they are consistent with the purchase order.

(iv) Segregates defective materials from the lot by comparing the delivery note sent by the supplier to the copy of the purchase order. Any shortage or breakage of material is indicated along with the acknowledgment sent to the supplier for the receipt of material.

(v) Passes on materials from the receiving clerk to the inspector for a thorough inspection of the materials received.

(vi) Prepares the **goods received note** showing the details of the materials received.

Inspection Note

When the receiving department within an organization receives materials, the materials are unpacked and compared to the materials listed in the purchase order. If the materials are found to be in order, they are sent to the inspector for quality inspection.

In turn, if the quality of the materials is acceptable, the inspector will prepare an inspection note to certify the quality.

Specimen/Format of Inspection Note

A specimen of the inspection note is given below.

A.B. Co. Ltd.

Inspection Note

Serial No. .... **Date ....**

Identification No.	Description	Qty. Supplied	Rate ($)	Amount	Remarks

The above stores have been thoroughly inspected by us at our/supplier's works/godown and we are of the opinion that they are in accordance with our requirements and are fit for use. We recommend their purchase.

1. ....
2. ....

Date. ....

3. ....

Inspection Officers

Rejection Note

If the materials received are not consistent with the purchase order, or if they are deemed unfit for use, the inspecting staff rejects them for return to the supplier. For this purpose, a document known as a rejection note is prepared.

Specimen/Format of Rejection Note

A specimen of the rejection note is given below.

A.B. Co. Ltd.
Rejection Note

<table>
<tr><td colspan="2" rowspan="2">To be returned to:</td><td colspan="2">Forwarding Note No. ....
Date. ....</td><td>Serial No................
Date. ....</td></tr>
<tr><td colspan="2">Mode of Transportation</td><td>P.O No. ....
Date. ....</td></tr>
<tr><td>S. No.</td><td>Identification No.</td><td>Quantity</td><td>Reasons for Rejection</td><td>Returned/Kept in Suspense</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Date. ....</td><td>1. ....
2. ....
3. ....

Inspection Officers</td></tr>
</table>

Material Receipts Book

This is the main book used for the purpose of store accounting. It keeps a date-wise record of the materials received in the stores. The material receipts book provides the following information:

- Name and address of the supplier
- Mode of transport
- Vehicle number
- Carrier's note number, date, and number of packages
- Brief description of materials
- Daily receipt voucher number (DRV No.) and date
- Stock ledger folio

Specimen/Format of Material Receipts Book

A specimen of the material receipts book is given below.

A.B. Co. Ltd.
Material Receipt Book

Date	Consignor's Name and Address	Mode of Transportation	Vehicle No. (if any)	Carrier's Note No. and Date	No. of Packages and Their Condition	Brief Description of Goods	D.R.V. No. and Date	Stock Ledger Folio	Receipt Clerk's Intials	Remarks
1	2	3	4	5	6	7	8	9	10	11

Materials Received Note or Goods Received Note

Some manufacturing concerns prefer to keep a loose card known as a **materials received note** (or a **goods received note**). This note is serially numbered and dated, and it avoids the use of the material receipts book.

The materials received note also replaces the daily receipt voucher. Although the materials received note avoids the use of the material receipts book, it is advisable to maintain this book since it is a prime book of store accounting and provides useful information.

Normally, five copies of the materials received note are sent to the purchasing department, accounting department, stores department, and the department that initiated the purchase requisition. The last copy is kept by the receiving department for future reference.

Specimen/Format of Materials Received Note

A specimen of the materials received note is given below.

A.B. Co. Ltd.
Goods Received Note

G.R. Note No. ....
Purchase Order No. ....
Date of Order. ....
Received from. ....

Material Inspection
Note No. ....
Delivery Note No. ....
Date ....

S. No.	Description	Symbol	Quantity	Code No.	Remarks

Sd. Received by — Sd. Checked by — Sd. Storekeeper — Sd. Store Ledger Clerk

Damage/Shortage/Excess Report

This report is prepared by the receiving section of the stores department. It is prepared after packages are opened and the comparison of actual materials received and materials ordered commences.

Payment to the supplier must be adjusted according to this document. The proforma of this report is as follows:

Damage/Shortage/Excess Report

From:
To Carrier: ....
To Consignor ....
Carrier's Note No. .....
Date. ....
Advice Note No. ....
Date ....

In correspondence, please quote:
Serial No. .... Date ....
Purchase Order No. ....
Date ....

Tick √ in the appropriate box:

☐ The goods have not yet arrived.

☐ The goods have arrived late by .... days.

☐ The goods have arrived but the quantities shown below were found damaged on receipt.

☐ The goods have arrived but the shortage shown below was found on receipt.

☐ The goods have arrived but the quantities shown below were found in excess. They are being returned through .... (mode of transportation).

S. No.	Identification No.	Description	Quantity Ordered	Discrepancy	Nature of Discrepancy	Remarks
1	2	3	4	5	6	7

Date .... **Storekeeper** ....

Copy to: Purchase Department for information and necessary action

Material Returned Note

Sometimes materials have to be returned to suppliers after these have been received in the factory. Such returns may occur before or after the preparation of the receiving report. If the return takes place before the preparation of the receiving report, such material obviously would not be included in the report and hence not debited in the stores books and ledgers. In that case, no adjustment in the account books would be necessary. But if the material is returned after its entry in the receiving report, a suitable document must be drawn up in support of the credit entry so as to exclude from the Stores of Material Account the value of the materials returned back. This document usually takes the form of a Material Returned Note or Material outward return note.

Notes

Notes

Unit 3.3 Industry set standards and guidelines for purchasing materials

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand Electric Industry standards.

Notification of Electronic Products under the Public Procurement (Preference to Make in India) Order 2017

Government has issued Public Procurement (Preference to Make in India) [PPP-MII] Order 2017 vide the Department for Promotion of Industry and Internal Trade (DPIIT) Order No.P-45021/2/2017-B.E.-II dated 15.06.2017 and subsequent revisions vide Order No. 45021/2/2017-PP(BE-II) dated 28.05.2018, 29.05.2019, 04.06.2020 and 16.09.2020 to encourage 'Make in India' and to promote manufacturing and production of goods, services and works in India with a view to enhancing income and employment. This Order is issued pursuant to Rule 153 (iii) of the General Financial Rules 2017. The salient features of the aforesaid Order are as under:

- The Order is applicable for procurement by Ministry / Department / attached / subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.
- In procurement of all goods, services or works in respect of which the Nodal Ministry/ Department has communicated that there is sufficient local capacity and local competition, only 'Class-I local supplier', as defined under the Order, shall be eligible to bid irrespective of purchase value.
- The margin of purchase preference shall be 20%. 'margin of purchase preference' means the maximum extent to which the price quoted by a local supplier may be above the L1 for the purpose of purchase preference.
- Ministry of Electronics and Information Technology is the Nodal Ministry for implementation of the Electronic Product Notifications issued in furtherance of PPP-MII Order 2017.

Classes of Local Suppliers based on local content as per the revised PPP-MII Order dated 04.06.2020 issued by the Department for Promotion of Industry and Internal Trade (DPIIT) are as under:

- **Class-I Local supplier** - a supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50%.
- **Class-II Local supplier** - a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%.
- **Non-Local supplier** - a supplier or service provider, whose goods, services or works offered for procurement, has local content less than or equal to 20%.
- Only **'Class-I local supplier'** and **'Class-II local supplier'** shall be eligible to bid in procurement of all goods, services or works, and with estimated value of purchases less than Rs. 200 crore.

In furtherance of the aforesaid revised PPP-MII Order dated 04.06.2020, MeitY has notified the mechanism for calculation of local content for the following 13 Electronic Products vide Notification No. 43/4/2019-IPHW-MeitY dated 07.09.2020:

(i) Desktop PCs, (ii) Thin Clients, (iii) Computer Monitors, (iv) Laptop PCs, (v) Tablet PCs, (vi) Dot Matrix Printers, (vii) Contact and Contactless Smart Cards, (viii) LED Products, (ix) Biometric Access Control / Authentication Devices, (x) Biometric Finger Print Sensors, (xi) Biometric Iris Sensors, (xii) Servers, and (xiii) Cellular Mobile Phones.

MeitY has also notified Cellular Mobile Phones under clause 3(a) of the PPP-MII Order which mandates that public procurement of Cellular Mobile Phones from local suppliers only.

Government E-Market Place (GeM) Portal and NICSI, the two major procurement agencies of Government of India, are expected to ensure compliance of the Electronic Products Notification in their procurement. In case of a complaint STQC will be the agency to look into the domestic value addition (local content).

EXERCISE

Short Questions

1. Explain receiving of material.
2. Write about unapproved materials.
3. What is quality check?
4. Explain materials return.
5. Explain types of purchase documents.

Long Questions

1. Explain the process of approving the purchase order from the authorized department/ personnel.
2. Describe the factors to be considered while preparing the receiving area.
3. Describe the procedure to check whether the quantity and quality of received materials is as per the set standards.
4. Explain how to segregate and return unapproved materials to the supplier.
5. Explain the process of documenting the purchase order issuance and receipt of materials as per standards.
6. Discuss the industry set standards and guidelines to be followed for purchasing materials.

Notes

Notes

Notes

Skill India
कौशल भारत-कुशल भारत

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

N·S·D·C
National
Skill Development
Corporation
Transforming the skill landscape

ESSCI
Skilling India in Electronics

4. Maintain Inventory of Materials

Unit 4.1 Inventory management systems
Unit 4.2 Storage and Inspection of materials

ELE/N7704

Key Learning Outcomes

By the end of this module, participants will be able to:

- Manage inventory and ensure availability of stock.
- Use appropriate software to maintain inventory.

Unit 4.1 Inventory management systems

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand various types of Inventory management system

Explain the different types of inventory management systems

If you produce on demand, the inventory management process starts when a company receives a customer order and continues until the order ships. Otherwise, the process begins when you forecast your demand and then place POs for the required raw materials or components. Other parts of the process include analyzing sales trends and organizing the storage of products in warehouses.

How Inventory Management Works

The goal of inventory management is to understand stock levels and stock's location in warehouses. Inventory management software tracks the flow of products from supplier through the production process to the customer. In the warehouse, inventory management tracks stock receipt, picking, packing and shipping.

Inventory Management Techniques and Terms

Some inventory management techniques use formulas and analysis to plan stock. Others rely on procedures. All methods aim to improve accuracy. The techniques a company uses depend on its needs and stock.

Find out which technique works best for your business by reading the guide to inventory management techniques. Here's a summary of them:

- **ABC Analysis:**

  This method works by identifying the most and least popular types of stock.**Batch Tracking:**

  This method groups similar items to track expiration dates and trace defective items.

- **Bulk Shipments:**

  This method considers unpacked materials that suppliers load directly into ships or trucks. It involves buying, storing and shipping inventory in bulk.

- **Consignment:**

  When practicing consignment inventory management, your business won't pay its supplier until a given product is sold. That supplier also retains ownership of the inventory until your company sells it.

- **Cross-Docking:**

  Using this method, you'll unload items directly from a supplier truck to the delivery truck. Warehousing is essentially eliminated.

- **Demand Forecasting:**

  This form of predictive analytics helps predict customer demand.

- **Dropshipping:**

  In the practice of dropshipping, the supplier ships items directly from its warehouse to the customer.

- **Economic Order Quantity (EOQ):**

  This formula shows exactly how much inventory a company should order to reduce holding and other costs.

- **FIFO and LIFO:**

  First in, first out (FIFO) means you move the oldest stock first. Last in, first out (LIFO) considers that prices always rise, so the most recently-purchased inventory is the most expensive and thus sold first.

- **Just-In-Time Inventory (JIT):**

  Companies use this method in an effort to maintain the lowest stock levels possible before a refill.

- **Lean Manufacturing:**

  This methodology focuses on removing waste or any item that does not provide value to the customer from the manufacturing system.

- **Materials Requirements Planning (MRP):**

  This system handles planning, scheduling and inventory control for manufacturing.

- **Minimum Order Quantity:**

  A company that relies on minimum order quantity will order minimum amounts of inventory from wholesalers in each order to keep costs low.

- **Reorder Point Formula:**

  Businesses use this formula to find the minimum amount of stock they should have before reordering, then manage their inventory accordingly.

- **Perpetual Inventory Management:**

  This technique entails recording stock sales and usage in real-time.

- **Safety Stock:**

  An inventory management ethos that prioritizes safety stock will ensure there's always extra stock set aside in case the company can't replenish those items.

- **Six Sigma:**

  This is a data-based method for removing waste from businesses as it relates to inventory.

- **Lean Six Sigma:**

  This method combines lean management and Six Sigma practices to remove waste and raise efficiency.

Objectives of material control:

The objectives of a system of material control are the following:

(i) ***Minimising interruption in production process:*** Ensuring that no activity, particularly production, suffers from interruption for want of materials and stores. It should be noted that this requires constant availability of every item that may be needed howsoever small its cost may be.

(ii) ***Cost of Material:*** Seeing to it that all the materials and stores are acquired at the lowest possible price considering the quality that is required and considering other relevant factors like reliability in respect of delivery, etc. Holding cost should also be tried to be minimized.

(iii) ***Reduction in Wastages*****:** Avoidance of unnecessary losses and wastages that may arise from deterioration in quality due to defective or long storage or from obsolescence. It may be noted that losses and wastages in the process of manufacture, concern the production department.

(iv) ***Adequate Information:*** Maintenance of proper records to ensure that reliable information is available for all items of materials and stores that not only helps in detecting losses and pilferages but also facilitates proper production planning.

(v) ***Completion of order in time:*** Proper material management is very necessary for fulfilling orders of the firm. This adds to the goodwill of the firm.

Requirements of material control:

Material control requirements can be summarised as follows:—

1. Proper co-ordination of all departments involved *viz.,* finance, purchasing, receiving, inspection, storage, accounting and payment.
2. Determining purchase procedure to see that purchases are made, after making suitable enquiries, at the most favourable terms to the firm.
3. Use of standard forms for placing the order, noting receipt of goods, authorising issue of the materials etc.
4. Preparation of budgets concerning materials, supplies and equipment to ensure economy in purchasing and use of materials.
5. Operation of a system of internal check so that all transactions involving materials, supplies and equipment purchases are properly approved and automatically checked.
6. Storage of all materials and supplies in a well designated location with proper safeguards.
7. Operation of a system of perpetual inventory together with continuous stock checking so that it is possible to determine at any time the amount and value of each kind of material in stock.
8. Operation of a system of stores control and issue so that there will be delivery of materials upon requisition to departments in the right amount at the time they are needed.
9. Development of system of controlling accounts and subsidiary records which exhibit summary and detailed material costs at the stage of material receipt and consumption.
10. Regular reports of materials purchased, issue from stock, inventory balances, obsolete stock, goods returned to vendors, and spoiled or defective units.

Elements of Material Control:

Material control is a systematic control over the procurement, storage and usage of material so as to maintain an even flow of material.

Material control involves efficient functioning of the following operations:

- Purchasing of materials
- Receiving of materials
- Inspection of materials
- Storage of materials
- Issuing materials
- Maintenance of inventory records
- Stock audit.

Describe the process for reordering materials as per quantity and specifications

The record of stores may be maintained in three forms:

- Bin Cards
- Stock Control Cards
- Store Ledger

Bin Cards: Bin refers to a box/ container/ space where materials are kept. Card is placed with each of the bin (space) to record the details of material like receipt, issue and return. The first two forms are records of quantities received, issued and those in balance, but in the third record i.e. store ledger, value of receipts, issues and closing balance is also maintained. Usually, records of quantities i.e. Bin cards and Store Control Cards are kept by the store keeper in store department while record of both quantity and value is maintained by cost accounting department.

Stock Control Cards: It is a record keeping document maintained by stores department for every item of material. Recording includes receipt, issue, return, in hand and order given.

Stores Ledger: A Stores Ledger is a collection of cards or loose leaves specially ruled for maintaining a record of both quantity and cost of stores received, issued and those in stock. It being a subsidiary ledger to the main cost ledger, it is maintained by the Cost Accounting Department. It is posted from Goods Received Notes and Materials requisition.

Valuation of Material

Materials issued from stores should be priced at the value at which they are carried in stock. But there can be a situation where the material may have been purchased at different times and at different prices with varying discounts, taxes etc. Because of this the problem arises as to how the material issues to production are to be valued. There are several methods for tackling this situation. The cost accountant should select the proper method based on following factors:

1. The frequency of purchases, price fluctuations and its range.
2. The frequency of issue of materials, relative quantity etc.
3. Nature of cost accounting system.
4. The nature of business and type of production process.
5. Management policy relating to valuation of closing stock.

Several methods of pricing material issues have been evolved in an attempt to satisfactorily answer the problem. These methods may be grouped and explained as follows:

Cost Price Methods:

(a) Specific price method.

(b) First-in First-out method.

(c) Last-in-First-out method.

(d) Base stock method.

Average Price Methods:

(e) Simple average price method.

(f) Weighted average price method.

(g) Periodic simple average price method.

(h) Periodic weighted average price method.

(i) Moving simple average price method.

(j) Moving weighted average price method.

Market Price Methods:

(k) Replacement price method.

(l) Realisable price method.

Notional Price Methods:

(m) Standard price method.

(n) Inflated price methods.

(o) Re-use Price Method.

First-in-First out Method (FIFO)

- It is a method of pricing the issues of materials, in the order in which they are purchased. In other words, the materials are issued in the order in which they arrive in the store or the items longest in stock are issued first. Thus each issue of material only recovers the purchase price which does not reflect the current market price.
- This method is considered suitable in times of falling price because the material cost charged to production will be high while the replacement cost of materials will be low. But, in the case of rising prices, if this method is adopted, the charge to production will be low as compared to the replacement cost of materials. Consequently, it would be difficult to purchase the same volume of material (as in the current period) in future without having additional capital resources.

Last-in-First out method (LIFO)

- It is a method of pricing the issues of materials. This method is based on the assumption that the items of the last batch (lot) purchased are the first to be issued. Therefore, under this method the prices of the last batch (lot) are used for pricing the issues, until it is exhausted, and so on. If however, the quantity of issue is more than the quantity of the latest lot than earlier (lot) and its price will also be taken into consideration.
- During inflationary period or period of rising prices, the use of LIFO would help to ensure that the cost of production determined on the above basis is approximately the current one. This method is also useful specially when there is a feeling that due to the use of FIFO or average methods, the profits shown and tax paid are too high.

Unit 4.2 Storage and Inspection of materials

Unit Objectives

By the end of this unit, participants will be able to:

1. Understand storage and controlling of materials

Material Storage

Proper storing of materials is of primary importance. It is not enough only to purchase material of the required quality. If the purchased material subsequently deteriorates in quality because of bad storage, the loss is even more than what might arise from purchase of bad quality materials. Apart from preservation of quality, the store-keeper also must ensure safe custody of the material. It should be the function of store-keeper that the right quantity of materials always should be available in stock.

Duties of store keeper

(i) **General control over store:** Store keeper should keep control over all activities in Stores department. He should check the quantities as mentioned in Goods received note and with the purchased materials forwarded by the receiving department and to arrange for the storage in appropriate places.

(ii) **Safe custody of materials:** Store keeper should ensure that all the materials are stored in a safe condition and environment required to preserve the quality of the materials.

(iii) **Maintaining records:** Store keeper should maintain proper record of quantity received, issued, balance in hand and transferred to/ from other stores.

(iv) **Initiate purchase requisition:** Store keeper should initiate purchase requisitions for the replacement of stock of all regular stores items whenever the stock level of any item of store approaches the re-order level fixed.

(v) **Maintaining adequate level of stock:** Store keeper should maintain adequate level of stock at all time. He/ she should take all necessary action so that production could not be interrupted due to lack of stock. Further he/ she should take immediate action for stoppage of further purchasing when the stock level approaches the maximum limit. To reserve a particular material for a specific job when so required.

(vi) **Issue of materials:** Store keeper should issue materials only against the material requisition slip approved by the appropriate authority. He/ she should also refer to bill of materials while issuing materials to requisitioning department.

(vii) **Stock verification and reconciliation:** Store keeper should verify the book balances with the actual physical stock at frequent intervals by way of internal control and check the any irregular or abnormal issues, pilferage, etc.

Inventory control

The main objective of inventory control is to achieve maximum efficiency in production and sales with the minimum investment in inventory. Inventory comprises of stocks of raw materials, stores & consumables, work-in-progress, and finished products. The techniques commonly applied for inventory control are as follows:

- Techniques of Inventory control:
- Setting of various stock levels.
- ABC analysis.
- Two bin system.
- Establishment of system of budgets.
- Use of perpetual inventory records and continuous stock verification.
- Determination of economic order quantity
- Review of slow and non-moving items.
- Use of control ratios.

Setting of Various Stock Levels

- **Re-Order Quantity:** Re-order quantity is the quantity of materials for which purchase requisition is made by the store department. While setting quantity to be re-ordered consideration is given to the maintenance of minimum level of stock, re-order level, minimum delivery time and the most important cost.
- **Re-order level**

  This level lies between minimum and the maximum levels in such a way that before the material ordered is received into the stores, there is sufficient quantity on hand to cover both normal and abnormal consumption situations. In other words, it is the level at which fresh order should be placed for replenishment of stock.
- **Minimum level**

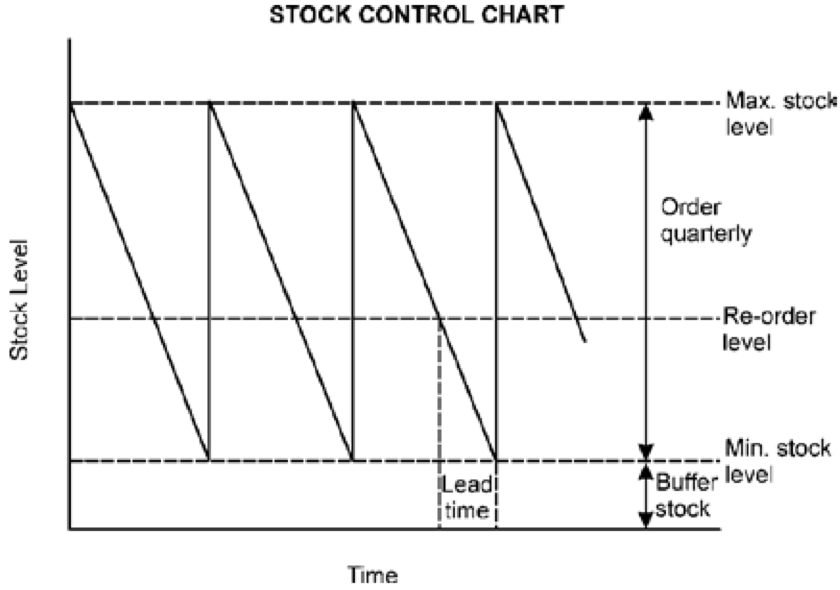
  The lowest figure of inventory balance, which must be maintained in hand at all times, so that there is no stoppage of production due to non-availability of inventory.
- **Maximum level**

  It indicates the maximum figure of inventory quantity held in stock at any time.
- **Average Inventory Level**

  Average inventory level is the average stock held by an organisation.
- **Danger level**

  It is the level at which normal issues of the raw material inventory are stopped and emergency issues are only made.
- **Buffer Stock:**

  Some quantity of stock may be kept for contingency to be used in case of sudden order, such stock is known as buffer stock.



Use of perpetual inventory records and continuous stock verification:

Perpetual inventory represents a system of records maintained by the stores department. It in fact comprises: (*i*) Bin Cards, and (*ii*) Stores Ledger.

The success of perpetual inventory depends upon the following:

(a) The Stores Ledger (showing quantities and amount of each item).

(b) Stock Control cards (or Bin Cards).

(c) Reconciling the quantity balances shown by (a) & (b) above.

(d) Checking the physical balances of a number of items every day systematically and by rotation.

(e) Explaining promptly the causes of discrepancies, if any, between physical balances and book figures.

(f) Making corrective entries where called for after step (e) and

(g) Removing the causes of the discrepancies referred to in step (e)

Continuous Stock Verification

- The checking of physical inventory is an essential feature of every sound system of material control. Such a checking may be periodical or continuous. Moreover, in the case of periodical checking there is the problem of finding an adequately trained contingent. It is likely to be drawn from different departments where stock-taking is not the normal work and they are apt to discharge such temporary duties somewhat perfunctorily. The element of surprise, that is essential for effective control is wholly absent in the system. Then if there are stock discrepancies, they remain undetected until the end of the period. Often, the discrepancies are not corrected.
- The system of continuous stock-taking consists of counting and verifying the number of items daily throughout the year so that during the year all items of stores are covered three or four times. The stock verifiers are independent of the stores, and the stores staffs have no foreknowledge as to the particular items that would be checked on any particular day. But it must be seen that each item is checked a number of times in a year.

Review of slow and non-moving items:

Sometimes, due to high value of slow moving and non-moving raw materials, it appears that the concern has blocked huge sum of money unnecessarily in raw materials. To overcome this problem, it is necessary to dispose- off these as early as possible or make arrangements for their exchange with the inventories required by the concern. Besides this no new requisition should be made for the purchase of slow moving items, till the existing stock is exhausted. Computation of inventory turnover ratio may help in identifying slow moving items.

Material Issue Procedure

- Issue of material must not be made except under properly authorised requisition slip; usually it is the foreman of a department who has the authority to draw materials from the store. Issue of material must be made on the basis of first in first out, that is, out of the earliest lot on hand. If care is not exercised in this regard, quality of earliest lot of material may deteriorate for having been kept for a long period.
- Material Requisition Note: It is the voucher of the authority as regards issue of materials for use in the factory or in any of its departments. After receipt of material requisition slip store keeper ensures that requisition is properly authorized and requisitioned quantity is within the quantity specified in bill of materials. After satisfied with the documents, store keeper issue materials and keep one copy of based materials and record the transaction in the records maintained by the stores department.
- Transfer of Material: The surplus material arising on a job or other units of production may sometime be unsuitable for transfer to Stores because of its bulk, heavy weight, brittleness or some such reason. It may, however, be possible to find some alternative use for such materials by transferring it to some other job instead of returning it to the Store Room.

EXERCISE

Short Questions

1. Describe material issue process.
2. What is slow and non- moving items?
3. What is perpetual inventory record?
4. What is buffer stock?
5. Explain duties of store keeper.

Long Questions

1. Explain the different types of inventory management systems.
2. Describe the process for reordering materials as per quantity and specifications.
3. Describe the basic concepts related to orders and purchase requirements such as re-order levels, LIFO and FIFO (Last in First Out and First In First Out).
4. Discuss factors important for taking the stock of materials.
5. Discuss the need of maintaining optimum inventory of materials within the organization.
6. Discuss the steps to follow for proper and safe storage of purchased materials.
7. Elaborate correct technique to check the obtained product as per required standards.
8. Describe how to conduct regular checks of stores to ensure optimum inventory of materials.

Notes

Notes

Notes

ESSCI
Skilling India in Electronics

5. Work effectively at the workplace

Unit 5.1 Effective Communication and Coordination of work
Unit 5.2 Work Effectively and Maintain discipline at work.
Unit 5.3 Maintain social diversity at work

ELE/N9905

Key Learning Outcomes

By the end of this unit, participants will be able to:

1. State the importance of work ethics and workplace etiquette
2. State the importance of effective communication and interpersonal skills
3. Explain ways to maintain discipline in the workplace
4. Discuss the common reasons for interpersonal conflict and ways of managing them effectively.

UNIT 5.1: Efffecte Communicacation aCoordinainati t Work

Unit Objectives

By the end of this unit, participants will be able to:

1. Work efffectely at the workplace.
2. Demonstrate practicesrelated to gender and PwD sensitazation.

5.1.1 Importance of Work Ethics and Workplace Etiquette

Workplace ethics are a set of moral and legal guidelines that organizations follow. These guidelines influence the way customers and employees interact with an organization. Workplace ethics essentially guide how an organization serves its clients and treats its employees.

For example, if a company seeks to fulfil the promises it makes, it may develop processes and set up a robust support system to address this policy and build customer/client loyalty. To achieve this goal, the company may implement specific incentive programs for employees to encourage them to produce high-quality work and ensure the organization fulfils the promises it makes to its clients/ customers.

Many organizations, often the large ones, set detailed ethical codes to guide their operations and control how the organizational processes impact the stakeholders. These ethics usually help organizations maintain certain standards of responsibility, accountability, professionalism and among others, as they navigate through different challenges and day-to-day circumstances. By following these guidelines, organizations often experience several benefits that improve the lives of stakeholders, such as customers, employees, leaders, etc.

Examples of Common Workplace Ethics

Fig. 5.1.1 Examples of Common Workplace Ethics

Workplace ethics are essential for a successful organization with a satisfied and loyal team. High ethical standards help in ensuring all stakeholders, such as customers, investors, employees, and other individuals involved in the workplace operations, feel the organization is safeguarding their interests. By creating and implementing ethical guidelines, organizations can keep the best interests of their employees in mind while maintaining a positive influence on those they impact through their processes. As a result, employees maintain the organization's best interests by being ethical in their daily work duties. For example, fairly-treated employees of an organization who understand the organization's commitments to environmental sustainability are usually less likely to behave in a manner that causes harm to the environment. Thus, they help maintain a positive public image of the organization. It means that workplace ethics help in maintaining reciprocal relationships that benefit organizations at large and the individuals associated with and influenced by the organizational policies.

Benefits of Workplace Ethics

There are various benefits of implementing workplace ethics. When organizations hold themselves to high ethical standards, leaders, stakeholders, and the general public can experience significant improvements. Following are some of the key benefits of employing ethics in the workplace:

- Employee satsffacon
- Improved workplace culture
- Legal compliance
- Improved public reputation
- Customer engagement and loyalty
- Streamlined decision-making processes

Fig. 5.1.2 Benefits of Workplace Ethics

5.1.2 Interpersonal Communication

Interpersonal communication is a process that involves sharing ideas and emotions with another person, both - verbally and non-verbally. It is essential to interact effectively with others in both personal and professional lives. In professional life or the workplace, strong interpersonal skills play a crucial role in achieving effective collaboration with colleagues.

Interpersonal Skills

Interpersonal skills, in other terms, are known as people skills, which are used to communicate and interact with others effectively. These are soft skills one uses to communicate with others and understand them. One uses these skills in daily life while interacting with people

Examples of Interpersonal Skills

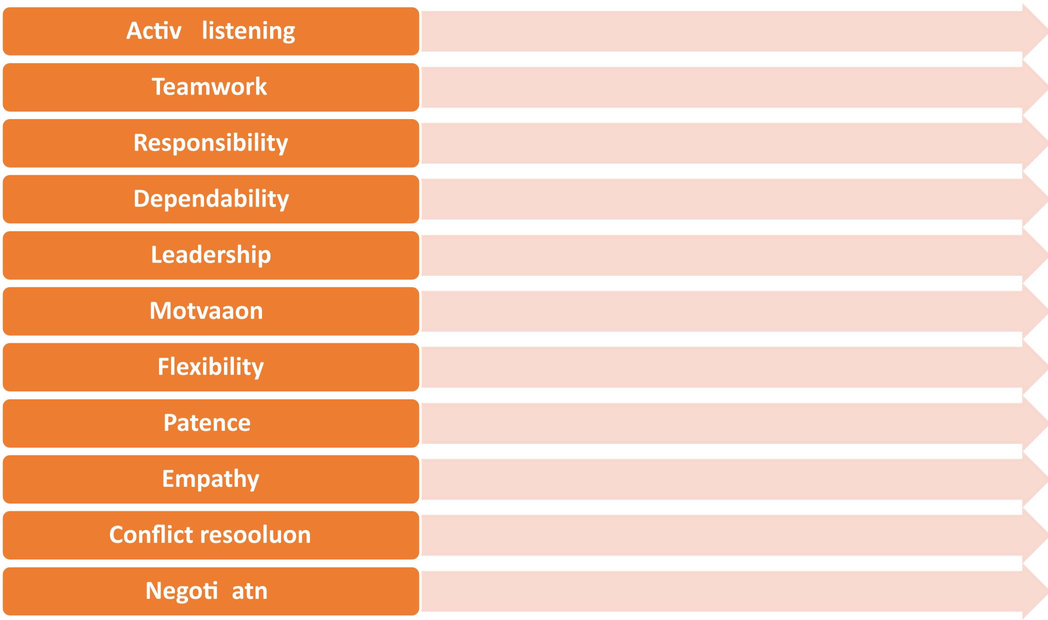


Fig 5.1.3 Examples of Interpersonal Skills

Numerous interpersonal skills involve communication. Communication can be verbal, such as persuasion or tone of voice — or non-verbal, such as listening and body language.

Importance of Interpersonal Skills

Interpersonal skills are essential for communicating and collaborating with groups and individuals in both personal and professional life. People with strong interpersonal skills often are able to build good relationships and also tend to work well with others. Most people often enjoy working with co-workers who have good interpersonal skills.

Among other benefits of good interpersonal skills is the ability to solve problems and make the best decisions. One can use the ability to understand others and good interpersonal communication skills to find the best solution or make the best decisions in the interest of everyone involved. Strong interpersonal skills help individuals work well in teams and collaborate effectively. Usually, people who possess good interpersonal skills also tend to be good leaders, owing to their ability to communicate well with others and motivate the people around them.

Interpersonal communicationis the key to working in a team environment and working ccollectely to achieve shared goals. Following are the interperso

Verbal Communication

The ability to speak clearly, appropriately and confidently can help one communicate effectively with others. It is vital to select the appropriate vocabulary and tone for the target audience.

For example – one should speak formally and professionally in the work environment, while informal language is acceptable in an intimate environment with close friends and family. Also, one should avoid using complex or technical language while communicating with an audience that may not be familiar with it. Using simple language in a courteous tone helps achieve better communication, irrespective of the audience.

Active Listening

Active listening is defined as the ability to pay complete or undivided attention to someone when they speak and understand what they are saying. It is important for effective communication because without understanding what the speaker is saying, it becomes difficult to carry forward a conversation. One should ensure to use appropriate verbal and non-verbal responses, e.g. eye contact, nodding, or smiling, to show interest in what the speaker says. Active listening is also about paying attention to the speaker's body language and visual cues. Asking and answering questions is one of the best ways to demonstrate an interest in conversing with the other person.

Active listening is critical for communicating effectively without ambiguity. It helps one understand the information or instructions being shared. It may also encourage co-workers to share their ideas, which ultimately helps achieve collaboration.

Body Language

One's expression, posture, and gestures are as important as verbal communication. One should practice open body language to encourage positivity and trust while communicating. Open body language includes - maintaining eye contact, nodding, smiling and being comfortable. On the other hand, one should avoid closed body language, e.g. crossed arms, shifting eyes and restless behaviour.

Empathy

Empathy is the ability to understand the emotions, ideas and needs of others from their point of view. Empathy is also known as emotional intelligence. Empathetic people are good at being aware of others' emotions and compassionate when communicating with them. Being empathetic in the workplace can be good to boost the morale of employees and improve productivity. By showing empathy, one can gain the trust and respect of others.

Conflict Resolution

One can use interpersonal communication skills to help resolve disagreements and conflicts in the workplace. This involves the application of negotiation and persuasion skills to resolve arguments between conflicting parties. It is also important to evaluate and understand both sides of the argument by listening closely to everyone involved and finding an amicable solution acceptable to all.

Good conflict resolution skills can help one contribute to creating a collaborative and positive work environment. With the ability to resolve conflicts, one can earn the trust and respect of co-workers.nal communicationskills that vital for success at work:

Teamwork

Employees who communicate and work well in a team often have better chances of achieving success and common goals. Being a team player can help one avoid conflicts and improve productivity. One can do this by offering to help co-workers when required and asking for their feedback and ideas. When team members give their opinions or advice, one should positively receive and react to the opinions/advice. One should be optimistic and encouraging when working in groups.

Improving Interpersonal Skills

One can develop interpersonal skills by practising good communication and setting goals for improvement. One should consider the following tips to improve their interpersonal skills:

- One should ask for feedback from co-workers, managers, family or friends to figure out what needs improvement concerning their interpersonal skills.
- One can identify the areas of interpersonal communication to strengthen by watching others.
- One can learn and improve interpersonal skills by observing co-workers, company leaders and professionals who possess good interpersonal skills. This includes watching and listening to them to note how they communicate and the body language used by them. It is vital to note their speed of speaking, tone of voice, and the way they engage with others. One should practice and apply such traits in their own interactions and relationships.
- One should learn to control their emotions. If stressed or upset, one should wait until being calm to have a conversation. One is more likely to communicate effectively and confidently when not under stress.
- One can reflect on their personal and professional conversations to identify the scope of improvement and learn how to handle conversations better or communicate more clearly. It helps to consider whether one could have reacted differently in a particular situation or used specific words or positive body language more effectively. It is also vital to note the successful and positive interactions to understand why they are successful.
- One should practice interpersonal skills by putting oneself in positions where one can build relationships and use interpersonal skills. For example, one can join groups that have organized meetings or social events. These could be industry-specific groups or groups with members who share an interest or hobby.
- Paying attention to family, friends and co-workers and making efforts to interact with them helps a lot. One should complement their family, friends and co-workers on their good ideas, hard work and achievements. Trying to understand someone's interests and showing interest in knowing them can help one build strong interpersonal skills. Offering to help someone, especially in difficult situations, helps build stronger and positive workplace relationships.
- One should avoid distractions, such as a mobile phone, while interacting with someone. Giving someone full attention while avoiding distractions helps achieve a clear exchange of ideas. By listening with focus, one can understand and respond effectively.

- One can attend appropriate courses on interpersonal skills or sign up for workshops at work to improve interpersonal skills. One can find many resources online also, such as online videos.
- For personal mentoring, one can approach a trusted family member, friend, co-worker, or current/ former employer. A person one looks up to with respect and admires is often a good choice to be selected as a mentor. One can even hire a professional career or communication coach.

Interpersonal communication skills often help one boost their morale, be more productive in the workplace, complete team projects smoothly and build positive and strong relationships with co-workers.

Notes

UNIT 5.2: Working Efffectely and Maintaining Discipline at Work

Unit Objectives

By the end of this unit, participants will be able to:

- Discuss the importance of following organizational guidelines for dress code, time schedules, language usage and other behavioural aspects
- Explain the importance of working as per the workflow of the organization to receive instructions and report problems
- Explain the importance of conveying information/instructions as per defined protocols to the authorised persons/team members
- Explain the common workplace guidelines and legal requirements on non-disclosure and confidentiality of business-sensitive information
- Describe the process of reporting grievances and unethical conduct such as data breaches, sexual harassment at the workplace, etc.
- Discuss ways of dealing with heightened emotions of self and others.

5.2.1 Discipline at Work

Discipline is essential for organizational success. It helps improve productivity, reduce conflict and prevent misconduct in the workplace. It is important to have rules concerning workplace discipline and ensure that all employees comply with them. In the absence of discipline, a workplace may experience conflicts, bullying, unethical behaviour and poor employee performance. An efficient workplace disciplinary process helps create transparency in the organization. Benefits of disciplinary standards:

All employees follow the same rules which helps establish uniformity and equality in the workplace

Managers and supervisors have defined guidelines on what accon to take while initi atg disciplinary y aon

With well-defined and enforced disciplinary rules, an organiizaon can avoid various safety, security, rupati nal risks

Fig 5.2.1 Benefits of Disciplinary Standards

Maintaining an organized and cohesive workforce requires maintaining discipline in both personal and professional behaviour. It is important to follow the appropriate measures to keep employees in line without affecting their morale.

Defining Discipline

The first and crucial step in maintaining workplace discipline is to define what is meant by discipline. It helps to evaluate common discipline problems and devise guidelines for handling them effectively.

Among a number of areas, discipline usually covers:

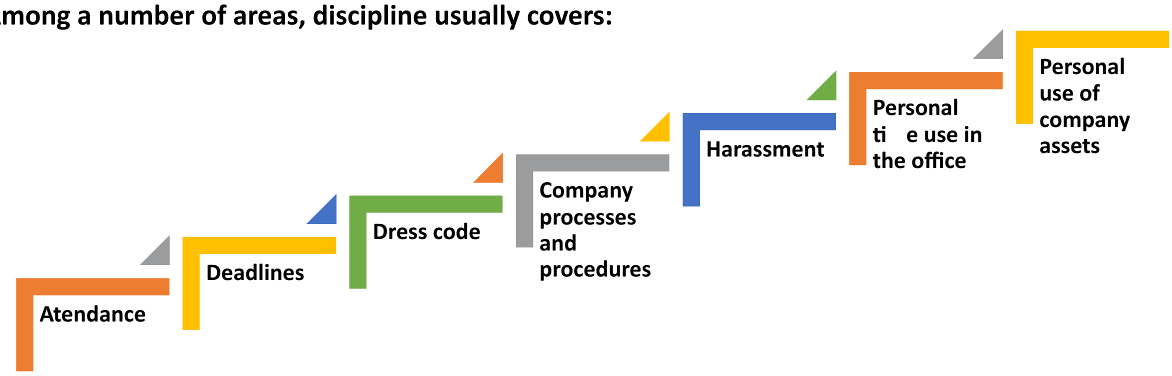


Fig 5.2.2 Examples of Workplace Discipline

According to demography and local issues, it may also include substance use and related issues.

It is vital for a workplace to have an employee handbook or company policy guide, to serve as a rulebook for employees to follow. The employee handbook/ company policy guide should be reviewed and updated periodically according to any issues or areas, or concerns identified concerning workplace discipline. Such manuals should also cover all the laws and regulations governing workplace behaviour.

Defining and documenting workplace rules aids in their implementation, ensuring little or no ambiguity. All employees in a workplace should also have easy access to the workplace guidelines so that they can refer to them to get clarity whenever required. To maintain discipline at work, it is also critical to ensure uniform application of workplace guidelines to all employees without exception.

5.2.2 Employee Code of Conduct

The employee code of conduct manual serves as a guide for employees to inform them regarding the behaviour expected from them at work. It helps create a good work environment with consistent behaviour from employees. The manual should list examples of acceptable and not acceptable behaviours at work. The code of conduct should be discussed with employees so that they have the clarifications required.

For example, an organization may create guidelines concerning the conduct with clients to ensure no contact is made with them except for business purposes, also prescribing the use of appropriate means of communication.

Employees should have a clear understanding concerning their job responsibilities and the behaviour expected from them with all stakeholders, e.g. company personnel, clients and associated third parties.

It is critical to have documented guidelines for employees to follow concerning all aspects of work. It should also document the disciplinary action to be followed in case of non-compliance, e.g. verbal and then written warning, temporary suspension or eventual termination of service in case of repeated non-compliance with the employee code of conduct. Employees should know what the company rules are and what will happen if they break the rules. However, disciplinary action should be initiated only when reasonably required to avoid its misuse for employee harassment.

There should also be an effective mechanism for employees to raise their concerns/ grievances and have them addressed while maintaining privacy, as required, e.g. raising concerns regarding the behaviour of a co-worker.

The employee code of conduct manual must be duly reviewed and approved by the concerned stakeholders, such as the Human Resources (HR) department and company executives.

5.2.3 Interpersonal Conflicts

Interpersonal conflict is any type of conflict between two or more people. These are found in both - personal and professional relationships - among friends, family, and co-workers. In the workplace, interpersonal conflict is often observed when a person or group of people interfere with another person's attempts at completing assignments and achieving goals. It is critical to resolve conflicts in the workplace to boost the morale of employees, repair working relationships among them, and improve customer satisfaction.

Reasons for Workplace Conflicts

Workplace conflicts are often observed when two or more people have different points of view. This can happen between managers, co-workers, or clients and customers. In general, interpersonal conflicts are caused by a lack of communication or unclear communication.

Some of the leading reasons for workplace conflicts are:

- Difference in values
- Personality clashes
- Poor communication

Example of poor communication – if a manager reassigns a task to another employee without communicating with the employee to whom it was originally assigned, interpersonal conflict can arise among them. This may potentially make the first employee, i.e. who was originally assigned the task, feel slighted and mistrusted by the manager. It may even cause animosity in the first employee toward the employee who has now been assigned the task.

Types of Interpersonal Conflict

Following are the four types of interpersonal conflicts:

a. **Policy-related interpersonal conflict**

When a conflict relates to a decision or situation that involves both parties, it can be called a policy-related interpersonal conflict. Example – two people or groups working on the same project, trying to adopt different approaches. To resolve policy-related interpersonal conflicts, the parties involved should try to look for a win-win situation or make a compromise. This is especially critical to resolve trivial issues so that work is not affected and common goals are achieved.

b. **Pseudo-conflicts**

Pseudo-conflict arises when two people or groups want different things and cannot reach an agreement. Pseudo-conflicts usually involve trivial disagreements that tend to hide the root of the issue.

c. **Ego-related interpersonal conflicts**

In ego conflicts, losing the argument may hurt or damage a person's pride. Sometimes ego conflicts arise when a number of small conflicts pile up on being left unresolved. To resolve ego-related conflicts, it's best to find the root of the issue and work towards a resolution.

d. **Value-related interpersonal conflicts**

Sometimes conflicts may occur between people when they have different value systems. Such conflicts can be difficult to identify initially, making the people involved think the other party is being disagreeable or stubborn, wherein they just have different values. Some co-workers may highly value their personal/ family time after office that they may be unreachable to clients during non-office hours, while others may place a high value on client satisfaction and may still be available for clients during non-office hours. Conflict may arise among such people when they may be required to coordinate to help a client during after-office hours. Value-related interpersonal conflicts are often difficult to settle since neither party likes to compromise.

Resolving Interpersonal Conflicts

Conflicts are usually likely in the workplace; they can, however, be prevented. Often resolving interpersonal conflicts through open communication helps build a stronger relationship, paving the way for effective coordination and success. Some ways to resolve interpersonal conflict:

- **Communication -** A great way to resolve interpersonal conflicts is for the opposing parties to listen to one another's opinions and understand their viewpoints. Meeting in person and keeping the conversation goal-oriented is important. One can have effective communication by following some measures, e.g. staying on the topic, listening actively, being mindful of the body language, maintaining eye contact, etc.

- **Active Listening -** One should patiently listen to what the other person is saying without interrupting or talking over them. It helps one display empathy and get to the root of the issue. Asking questions to seek clarification when required helps in clear communication and conveys to the other person that one is listening to them. Practising active listening is a great way to improve one's communication skills.
- **Displaying Empathy -** Listening attentively and identifying the anxieties/ issues of co-workers is a great way to show empathy and concern. It is essential to understand their feelings and actions to encourage honesty and avoid future conflict.
- **Not Holding Grudges -** With different types of people and personalities in a workplace, it is common for co-workers to have conflicts. It is best to accept the difference in opinions and move on. Being forgiving and letting go of grudges allows one to focus on the positive side of things and perform better at work.

Work-related interpersonal conflicts can be complicated because different people have different leadership styles, personality characteristics, job responsibilities and ways in which they interact. One should learn to look above interpersonal conflicts, resolving them to ensure work goals and environment are not affected.

5.2.4 Importance of Following Organizational Guidelines

Policies and procedures or organizational guidelines are essential for any organization. These provide a road map for the operations of the organization. These are also critical in ensuring compliance with the applicable laws and regulations by guiding the decision-making process and business operations.
Organizational guidelines help bring uniformity to the operations of an organization, which helps reduce the risk of unwanted and unexpected events. These determine how employees are supposed to behave at work, which ultimately helps the business achieve its objectives efficiently.
However, organizational guidelines are ineffective and fail to serve their purpose if they are not followed. Many people don't like the idea of following and abiding by specific guidelines. Such people should be made to understand the benefits of following the organizational guidelines. Some of the key benefits are given below:

With well-defined organizational guidelines in place, no individual can act arbitrarily, irrespective of their position in the organization. All individuals will know the pros and cons of taking certain actions and what to expect in case of unacceptable behaviour. Benefits of following organizational guidelines:

- Consistent processes and structures - Organization guidelines help maintain consistency in operations, avoiding any disorder. When all employees follow the organizational guidelines, an organization can run smoothly. These ensure that people in different job roles operate as they are supposed to, knowing what they are responsible for, what is expected of them, and what they can expect from their supervisors and co-workers. With clarity in mind, they can do their jobs with confidence and excellence. With every person working the way intended, it's easy to minimise errors.

  With all the staff following organizational guidelines, the organization has a better scope of using time and resources more effectively and efficiently. This allows the organization to grow and achieve its objectives.
- **Better quality service -** By following organizational guidelines, employees perform their duties correctly as per the defined job responsibilities. It helps enhance the quality of the organization's products and services, helping improve the organization's reputation. Working with a reputable organization, employees can take pride in their work and know they are contributing to the reputation.
- **A safer workplace -** When all employees follow organizational guidelines, it becomes easy to minimise workplace incidents and accidents. It reduces the liabilities associated with risks for the organization and limits the interruptions in operations. Employees also feel comfortable and safe in the workplace, knowing their co-workers are ensuring safety at work by following the applicable guidelines.

Different organizations may have different guidelines on dress code, time schedules, language usage, etc. For example – certain organizations in a client-dealing business requiring employees to meet clients personally follow a strict dress code asking their employees to wear formal business attire. Similarly, organizations operating in specific regions may require their employees to use the dominant regional language of the particular region to build rapport with customers and serve them better. Certain organizations, such as banks, often give preference to candidates with knowledge of the regional language during hiring.

Working hours may also differ from one organization to another, with some requiring employees to work extra compared to others. One should follow the organizational guidelines concerning all the aspects of the employment to ensure a cohesive work environment.

5.2.5 Workflow

Workflow is the order of steps from the beginning to the end of a task or work process. In other words, it is the way a particular type of work is organised or the order of stages in a particular work process.

Workflows can help simplify and automate repeatable business tasks, helping improve efficiency and minimise the room for errors. With workflows in place, managers can make quick and smart decisions while employees can collaborate more productively.

Other than the order that workflows create in a business, these have several other benefits, such as:

- Identifying Redundancies - Mapping out work processes in a workflow allows one to get a clear, top-level view of a business. It allows one to identify and remove redundant or unproductive processes.

  Workflow gives greater insights into business processes. Utilizing such useful insights, one can improve work processes and the bottom line of the business. In many businesses, there are many unnecessary and redundant tasks that take place daily. Once an organization has insight into its processes while preparing workflow, it can determine which activities are really necessary.

  Identifying and eliminating redundant tasks creates value for a business. With redundant tasks and processes eliminated, an organization can focus on what's important to the business.

- Increase in Accountability and Reduction in Micromanagement - Micromanagement often causes problems in a business setting as most employees don't like being micromanaged, and even many managers don't like the practice. Micromanagement is often identified as one of the reasons why people quit their job.

  However, the need for micromanagement can be minimized by clearly mapping out the workflow. This way, every individual in a team knows what tasks need to be completed and by when and who is responsible for completing them. This makes employees more accountable also.

  With clearly defined workflow processes, managers don't have to spend much time micromanaging their employees, who don't have to approach the manager to know what the further steps are. Following a workflow, employees know what is going on and what needs to be done. This, in turn, may help increase the job satisfaction of everyone involved while improving the relationships between management and employees.

- Improved Communication - Communication at work is critical because it affects all aspects of an organization. There are instances when the main conflict in an organization originates from miscommunication, e.g. the management and employees disagreeing on an aspect, despite pursuing the same objectives. Poor communication is a common workplace issue that is often not dealt with.

- This highlights why workflow is important. Workplace communication dramatically can increase with the visibility of processes and accountability. It helps make the daily operations smoother overall.

- Better Customer Service - Customers or clients are central to a business. Therefore, it is imperative to find and improve ways to improve customer experience. Relying on outdated manual systems may cause customer requests or complaints to be overlooked, with dissatisfied customers taking their business elsewhere. However, following a well-researched and defined workflow can help improve the quality of customer service.

By automating workflows and processes, an organization can also reduce the likelihood of human error. This also helps improve the quality of products or services over time, resulting in a better customer experience.

5.2.6 Following Instructions and Reporting Problems

All organizations follow a hierarchy, with most employees reporting to a manager or supervisor. For organizational success, it is vital for employees to follow the instructions of their manager or supervisor. They should ensure they perform their duties as per the given instructions to help achieve the common objectives of the organization and deliver quality service or products. This consequently helps maintain the reputation of the organization.

It is also important to be vigilant and identify problems at work or with the organizational work processes. One should deal with the identified within their limits of authority and report out of authority problems to the manager/ supervisor or the concerned person for a prompt resolution to minimise the impact on customers/clients and business.

5.2.7 Information or D ta Sharing

Information or data is critical to all organizations. Depending on the nature of its business, an organization may hold different types of data, e.g. personal data of customers or client data concerning their business operations and contacts. It is vital to effective measures for the appropriate handling of different types of data, ensuring its protection from unauthorized access and consequent misuse.

One should access certain data only if authorised to do so. The same is applicable when sharing data which must be shared only with the people authorised to receive it to use it for a specific purpose as per their job role and organizational guidelines. For example – one should be extra cautious while sharing business data with any third parties to ensure they get access only to the limited data they need as per any agreements with them. It is also critical to monitor how the recipient of the data uses it, which should strictly be as per the organizational guidelines. It is a best practice to share appropriate instructions with the recipient of data to ensure they are aware of the purpose with which data is being shared with them and how they are supposed to use and handle it. Any misuse of data must be identified and reported promptly to the appropriate person to minimise any damage arising out of data misuse.

These days most organizations require their employees and business partners or associated third parties to sign and accept the relevant agreement on the non-disclosure of business-sensitive information. In simple terms, business-sensitive information is confidential information. It is proprietary business information collected or created during the course of conducting business, including information about the business, e.g. proposed investments, intellectual property, trade secrets, or plans for a merger and information related to its clients. Business-sensitive information may sometimes also include information regarding a business's competitors in an industry.

The release of business-sensitive information to competitors or the general public poses a risk to a business. For example, information regarding plans for a merger could be harmful to a business if a competitor gets access to it.

5.2.8 Reporting Issues at Work

Most organizations have defined guidelines on appropriate reporting processes to be followed for reporting different types of issues. For example – one can report any grievances or dissatisfaction concerning co-workers to their manager/supervisor, e.g. data breaches or unethical conduct. If the concern is not addressed, then the employee should follow the organizational guidelines and hierarchy for the escalation of such issues that are not addressed appropriately.

For example – any concern related to sexual harassment at the workplace should be escalated to the concerned spokesperson, such as Human Resources (HR) representative, and if not satisfied with the action taken, it should be reported to the senior management for their consideration and prompt action.

5.2.9 Dealing with Heightened Emotions

Humans are emotional beings. There may be occasions when one is overwhelmed by emotions and is unable to suppress them. However, there may be situations when one must manage emotions well, particularly at work.

Stress in one's personal and professional life may often cause emotional outbursts at work. Managing one's emotions well, particularly the negative ones, is often seen as a measure of one's professionalism. Anger, dislike, frustration, worry, and unhappiness are the most common negative emotions experienced at work.

Ways to manage negative emotions at work:

- **Compartmentalisation –** It's about not confining emotions to different aspects of one's life. For example, not letting negative emotions from personal life affect work-life and vice versa. One should try to leave personal matters and issues at home. One should train their mind to let go of personal matters before reaching work. Similarly, one can compartmentalise work-related stresses so that negative emotions from work don't affect one's personal life.

- **Deep breathing and relaxation –** Deep breathing helps with anxiety, worry, frustration and anger. One should take deep breaths, slowly count to ten - inhaling and exhaling until one calms down. One can also take a walk to calm down or listen to relaxing music. Talking to someone and sharing concerns also helps one calm down.

- **The 10-second rule -** This is particularly helpful in controlling anger and frustration. When one feels their temper rising, they should count to 10 to calm down and recompose. If possible, one should move away to allow temper to come down.

- **Clarify -** It is always good to clarify before reacting, as it may be a simple case of misunderstanding or miscommunication.

- **Physical activity -** Instead of losing temper, one should plan to exercise, such as running or going to the gym, to let the anger out. Exercise is also a great way to enhance mood and release any physical tension in the body.

- **Practising restraint -** One should avoid replying or making a decision when angry, not allowing anger or unhappiness to cloud one's judgement. It may be best to pause any communication while one is angry, e.g. not communicating over email when angry or upset.

- **Knowing one's triggers -** It helps when one is able to recognise what upsets or angers them. This way, one can prepare to remain calm and plan their reaction should a situation occur. One may even be able to anticipate the other party's reaction.

- **Be respectful -** One should treat their colleagues the same way one would like to be treated. If the other person is rude, one need not reciprocate. It is possible to stay gracious, firm and assertive without being aggressive. Sometimes, rude people back away when they don't get a reaction from the person they are arguing with.

- **Apologise for any emotional outburst –** Sometimes, one can get overwhelmed by emotions, reacting with an emotional outburst. In such a case, one should accept responsibility and apologise immediately to the affected persons without being defensive.

- **Doing away with negative emotions -** It is recommended to let go of anger, frustration and unhappiness at the end of every workday. Harbouring negative emotions affects one emotionally, affecting their job performance also. Engaging in enjoyable activities after work is a good stress reliever.

Notes

UNIT 5.3: Maintaining Social Diversity at Work

Unit Objectives

By the end of this unit, participants will be able to:

1. Explain the concept and importance of gender sensitivityand equality.
2. Discuss ways to create sensitivityfor different genders and Persons with h Disabiliti(PwD).

5.3.1 Gender Sensitivity

Gender sensitivity is the act of being sensitive towards people and their thoughts regarding gender. It ensures that people know the accurate meaning of gender equality, and one's gender should not be given priority over their capabilities.

Fig 5.3.1 Gender Equality

Women are an important source of labour in many sectors, yet they have limited access to resources and benefits. Women should receive the same benefits and access to resources as men. A business can improve its productivity and quality of work by providing better support and opportunities to women.

Important Terms

- **Gender Sensitivity-** Gender sensitivity is the act of being sensitive to the ways people think about gender.
- **Gender Equality -** It means persons of any gender enjoy equal opportunities, responsibilities, and rights in all areas of life.
- **Gender Discrimination –** It means treating an individual unequally or disadvantageously based on their gender, e.g. paying different wages to men and women for similar or equal job positions.

Strategies for Enhancing Gender Equity

To enhance gender equity, one should:

- Follow gender-neutral practices at all levels at work.
- Participate together in decision-making.
- Help in promoting women's participation in different forums.
- Assist women in getting exposure to relevant skills and practices.
- Assist women in capacity building by mentoring, coaching or motivating them, as appropriate.
- Assist in the formation and operation of women support groups.
- Assist in the implementation of women-centric programmes.
- Combine technical training with reproductive health and nutrition for coffee farming households.
- Assist in making a work environment that is healthy, safe, and free from discrimination.

Bridging Gender Differences

Men and women react and communicate very differently. Thus, there are some work differences as both genders have their style and method of handling a situation.

Although, understanding and maturity vary from person to person, even between these genders, based on their knowledge, education, experience, culture, age, and upbringing, as well as how one's brain functions over a thought or problem.

In order to bridge the gap, one should:

- Not categorize all men and women in one way.
- Be aware of the verbal and non-verbal styles of communication of every gender to avoid any miscommunication and work better.
- Be aware of partial behaviour and avoid it.
- Encourage co-workers of different genders to make room by providing space to others.

Ways to reduce Gender Discrimination

- Effective steps against sexual harassment by the concerned authorities and general public.
- Gender stereotypes are how society expects people to act based on their gender. This can only be reduced by adopting appropriate behaviour and the right attitude.
- Objectification of females must be abolished.

Ways to Promote Gender Sensitivity in the Workplace

Practices that promote gender diversity should be adopted and promoted.

- All genders should receive equal responsibilities, rights, and privileges.
- All genders should have equal pay for similar or the same job roles/ positions.
- Strict and effective workplace harassment policies should be developed and implemented.
- An open-minded and stress-free work environment should be available to all the employees, irrespective of their gender.
- Women should be encouraged to go ahead in every field of work and assume leadership roles.
- Follow appropriate measures for women's empowerment.
- Men should be taught to be sensitive to women and mindful of their rights.

5.3.2 PwD Sensitivity

Some individuals are born with a disability, while others may become disabled due to an accident, illness or as they get old. People with Disabilities (PwD) may have one or more areas in which their functioning is affected. A disability can affect hearing, sight, communication, breathing, understanding, mobility, balance, and concentration or may include the loss of a limb. A disability may contribute to how a person feels and affect their mental health

Important Terms

·**Persons with Disabilities (PwD) –** Persons with Disabilities means a person suffering from not less than 40% of any disability as certified by a medical authority.

·**Types of Disability:**

a. Blindness – Visually impaired
b. Low Vision
c. Leprosy Cured
d. Hearing impairment
e. Locomotor disability
f. Mental retardation
g. Mental illness

PwD Sensitivity

PwD sensitivity promotes empathy, etiquette and equal participation of individuals and organizations while working with individuals with a disability, e.g. sensory, physical or intellectual.

Ways to be PwD Sensitive

To be sensitive to PwD, one should:

- Be respectful to all Persons with Disabilities (PwD) and communicate in a way that reflects PwD sensitivity.
- Always be supportive and kind towards a PwD with their daily chores.
- Be ready to assist a PwD to help them avail of any benefit/ livelihood opportunity/ training or any kind that helps them grow.
- Encourage and try to make things easier and accessible to PwD so that they can work without or with minimum help.
- Protest where feasible and report any wrong act/behaviour against any PwD to the appropriate authority.
- Learn and follow the laws, acts, and policies relevant to PwD.

Appropriate Verbal Communication

As part of appropriate verbal communication with all genders and PwD, one should:

- Talk to all genders and PwD respectfully, maintaining a normal tone of voice with appropriate politeness. It is important to ensure one's tone of voice does not have hints of sarcasm, anger, or unwelcome affection.
- Avoid being too self-conscious concerning the words to use while also ensuring not to use words that imply one's superiority over the other.
- Make no difference between a PwD and their caretaker. Treat PwD like adults and talk to them directly.
- Ask a PwD if they need any assistance instead of assuming they need it and offering assistance spontaneously.

Appropriate Non-verbal Communication

Non-verbal communication is essentially the way someone communicates through their body language. These include:

- **Facial expressions -** The human face is quite expressive, capable of conveying many emotions without using words. Facial expressions must usually be maintained neutral and should change according to the situation, e.g. smile as a gesture of greeting.
- **Body posture and movement -** One should be mindful of how to sit, stand, walk, or hold their head. For example - one should sit and walk straight in a composed manner. The way one moves and carries self, communicates a lot to others. This type of non-verbal communication includes one's posture, bearing, stance, and subtle movements.

- **Gestures -** One should be very careful with their gestures, e.g. waving, pointing, beckoning, or using one's hands while speaking. One should use appropriate and positive gestures to maintain respect for the other person while being aware that a gesture may have different meanings in different cultures.

- **Eye contact -** Eye contact is particularly significant in non-verbal communication. The way someone looks at someone else may communicate many things, such as interest, hostility, affection or attraction. Eye contact is vital for maintaining the flow of conversation and for understanding the other person's interest and response. One should maintain appropriate eye contact, ensuring not to stare or look over the shoulders. To maintain respect, one should sit or stand at the other person's eye level to make eye contact.
- **Touch -** Touch is a very sensitive type of non-verbal communication. Examples are - handshakes, hugs, pat on the back or head, gripping the arm, etc. A firm handshake indicates interest, while a weak handshake indicates the opposite. One should be extra cautious not to touch others inappropriately and avoid touching them inadvertently by maintaining a safe distance.

Rights of PwD

PwD have the right to respect and human dignity. Irrespective of the nature and seriousness of their disabilities, PwD have the same fundamental rights as others, such as:
- Disabled persons have the same civil and political rights as other people
- Disabled persons are entitled to the measures designed to enable them to become as self-dependent as possible
- Disabled persons have the right to economic and social security
- Disabled persons have the right to live with their families or foster parents and participate in all social and creative activities.
- Disabled persons are protected against all exploitation and treatment of discriminatory and abusive nature.

Making Workplace PwD Friendly

- One should not make PwD feel uncomfortable by giving too little or too much attention
- One should use a normal tone while communicating with a PwD and treat them as all others keeping in mind their limitations and type of disability
- Any help should be provided only when asked for by a PwD
- One should help in ensuring the health and well-being of PwD.

Expected Employer Behaviour

Some of the common behavioural traits that employees expect from their employers are:

- Cooperation: No work is successful without cooperation from the employer's side. Cooperation helps to understand the job role better and complete it within the given timeline.
- Polite language: Polite language is always welcomed at work. This is a basic aspect that everybody expects.
- Positive Attitude: Employers with a positive attitude can supervise the work of the employees and act as a helping hand to accomplish the given task. A person with a positive attitude looks at the best qualities in others and helps them gain success.
- Unbiased behaviour: Employers should always remain fair towards all their employees. One should not adopt practices to favour one employee while neglecting or ignoring the other. This might create animosity among co-workers.
- Decent behaviour: The employer should never improperly present oneself before the employee. One should always respect each other's presence and behave accordingly. The employer should not speak or act in a manner that may make the employee feel uneasy, insulted, and insecure.

Exercise

1. List down three examples of workplace ethics.
2. List down three examples of interpersonal skills.
3. Identify two reasons for workplace conflicts.
4. Identify two ways of resolving interpersonal conflicts
5. List down two ways of dealing with heightened emotions at work.
6. List down two types of non-verbal communication.

Notes

6. Apply health and safety practices at the workplace

Unit 6.1 Workplace Hazards
Unit 6.2 Fire Safety
Unit 6.3 First Aid
Unit 6.4 Waste Management

ELE/N1002

Key Learning Outcomes

By the end of this module, participants will be able to:

1. Discuss job-site hazards, risks and accidents
2. Explain the organizational safety procedures for maintaining electrical safety, handling tools and hazardous materials
3. Describe how to interpret warning signs while accessing sensitive work areas
4. Explain the importance of good housekeeping
5. Describe the importance of maintaining appropriate postures while lifting heavy objects
6. List the types of fire and fire extinguishers
7. Describe the concept of waste management and methods of disposing of hazardous waste
8. List the common sources of pollution and ways to minimize them
9. Elaborate on electronic waste disposal procedures
10. Explain how the administer appropriate first aid to victims in case of bleeding, burns, choking, electric shock, poisoning and also administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock

UNIT 6.1: Workplace Hazards

Unit Objectives

By the end of this unit, participants will be able to:

- Discuss job-site hazards, risks and accidents
- Explain the organizational safety procedures for maintaining electrical safety, handling tools and hazardous materials
- Describe how to interpret warning signs while accessing sensitive work areas
- Explain the importance of good housekeeping
- Describe the importance of maintaining appropriate postures while lifting heavy objects
- Explain safe handling of tools and Personal Protective Equipment to be used.

6.1.1 Workplace Safety

Workplace safety is important to be established for creating a safe and secure working for the workers. The workplace has to be administered as per the rules of the Occupational Safety and Health Administration (OSHA). It refers to monitoring the working environment and all hazardous factors that impact employees' safety, health, and well-being. It is important to provide a safe working environment to the employees to increase their productivity, wellness, skills, etc.

The benefits of workplace safety are:

- Employee retention increases if they are provided with a safe working environment.
- Failure to follow OSHA's laws and guidelines can result in significant legal and financial consequences.
- A safe environment enables employees to stay invested in their work and increases productivity.
- Employer branding and company reputation can both benefit from a safe working environment.

6.1.2 Workplace Hazards

A workplace is a situation that has the potential to cause harm or injury to the workers and damage the tools or property of the workplace. Hazards exist in every workplace and can come from a variety of sources. Finding and removing them is an important component of making a safe workplace.

Common Workplace Hazards

The common workplace hazards are:

·Biological: The threats caused by biological agents like viruses, bacteria, animals, plants, insects and also humans, are known as biological hazards.

- **Chemical:** Chemical hazard is the hazard of inhaling various chemicals, liquids and solvents. Skin irritation, respiratory system irritation, blindness, corrosion, and explosions are all possible health and physical consequences of these dangers.
- **Mechanical:** Mechanical Hazards comprise the injuries that can be caused by the moving parts of machinery, plant or equipment.
- **Psychological:** Psychological hazards are occupational hazards caused by stress, harassment, and violence.
- **Physical:** The threats that can cause physical damage to people is called physical hazard. These include unsafe conditions that can cause injury, illness and death.
- **Ergonomic:** Ergonomic Hazards are the hazards of the workplace caused due to awkward posture, forceful motion, stationary position, direct pressure, vibration, extreme temperature, noise, work stress, etc.

Workplace Hazards Analysis

A workplace hazard analysis is a method of identifying risks before they occur by focusing on occupational tasks. It focuses on the worker's relationship with the task, the tools, and the work environment. After identifying the hazards of the workplace, organisations shall try to eliminate or minimize them to an acceptable level of risk.

Control Measures of Workplace Hazards

Control measures are actions that can be taken to reduce the risk of being exposed to the hazard. Elimination, Substitution, Engineering Controls, Administrative Controls, and Personal Protective Equipment are the five general categories of control measures.

- **Elimination:** The most successful control technique is to eliminate a specific hazard or hazardous work procedure or prevent it from entering the workplace.

- **Substitution:** Substitution is the process of replacing something harmful with something less hazardous. While substituting the hazard may not eliminate all of the risks associated with the process or activity, it will reduce the overall harm or health impacts.

- **Engineering Controls:** Engineered controls protect workers by eliminating hazardous situations or creating a barrier between the worker and the hazard, or removing the hazard from the person.

- **Administrative Controls:** To reduce exposure to hazards, administrative controls limit the length of time spent working on a hazardous task that might be used in combination with other measures of control.

- **Personal Protective Equipment:** Personal protective equipment protects users from health and safety hazards at work. It includes items like safety helmets, gloves, eye protection, etc.

6.1.3 Risk for a Drone Technician

A drone technician may require to repair the propeller, motor and its mount, battery, mainboards, processor, booms, avionics, camera, sensors, chassis, wiring and landing gear. A technician may face some risks while repairing the drones' equipment.

- The technician is susceptible to being physically harmed by propellers.
- Direct contact with exposed electrical circuits can injure the person.
- If the skin gets in touch with the heat generated from electric arcs, it burns the internal tissues.
- Major electrical injuries can occur due to poorly installed electrical equipment, faulty wiring, overloaded or overheated outlets, use of extension cables, incorrect use of replacement fuses, use of equipment with wet hands, etc.

6.1.4 Workplace Warning Signs

A Hazard sign is defined as 'information or instruction about health and safety at work on a signboard, an illuminated sign or sound signal, a verbal communication or hand signal.'

There are four different types of safety signs:

- Prohibition / Danger Alarm Signs
- Mandatory Signs
- Warning Signs
- And Emergency

1. Prohibition Signs: A "prohibition sign" is a safety sign that prohibits behaviour that is likely to endanger one's health or safety. The colour red is necessary for these health and safety signs. Only what or who is forbidden should be displayed on a restriction sign.

Fig. 6.1.1. Prohibition arning Signs

2. Mandatory Signs:

Mandatory signs give clear directions that must be followed. The icons are white circles that have been reversed out of a blue circle. On a white background, the text is black.

Fig. 6.1.2. Mandatory Signs

3. Warning Signs

Warning signs are the safety informationcommunicaatiosigns. They are shown as a 'yellow colour triangle'.

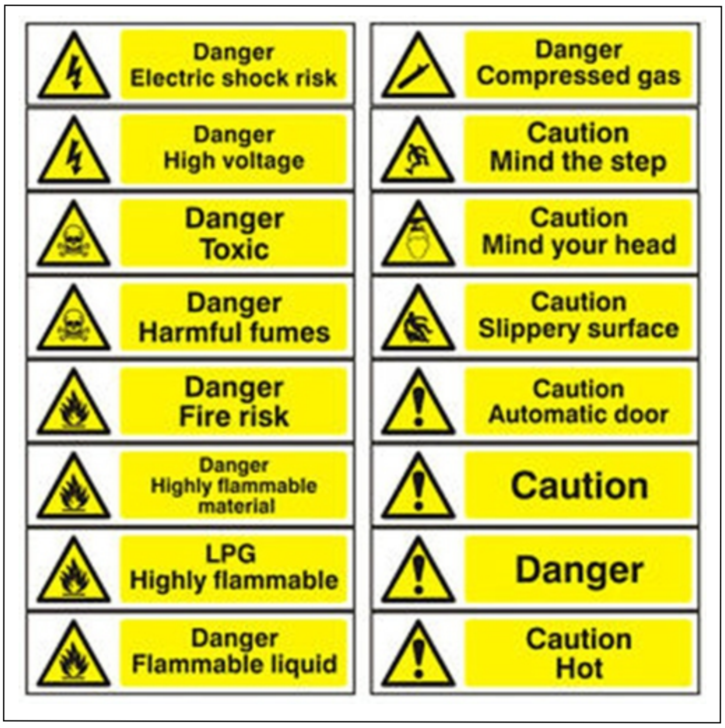


Fig. 6.1.3. Warning Signs

4. Emergency Signs

The locationor routes to emergency ffacilitieare indicated by emergency signs. These signs have a green backdrop with a white emblem or writing.These signs convey basic informaatioand frequently refer to housekeeping, company procedures, or logistics.

Fig. 6.1.4. Emergency Signs

6.1.5 Cleanliness in the Workplace

Workplace cleanliness maintenance creates a healthy, efficient and productive environment for the employees. Cleanliness at the workplace is hindered by some elements like cluttered desks, leftover food, waste paper, etc. A tidy workplace is said to improve employee professionalism and enthusiasm while also encouraging a healthy working environment.

Benefits of cleanliness in the workplace:

1. Productivity: Cleanliness in the workplace can bring a sense of belonging to the employees, also motivating and boosting the morale of the employees. This results in increasing their productivity.
2. Employee Well-being: Employee well-being can be improved by providing a clean work environment. Employees use fewer sick days in a workplace where litter and waste are properly disposed of, and surfaces are cleaned regularly, resulting in increased overall productivity.
3. Positive Impression: Cleanliness and orderliness in the workplace provide a positive impression on both employees and visitors.
4. Cost saving: By maintaining acceptable levels of cleanliness in the workplace, businesses can save money on cleaning bills and renovations, which may become necessary if the premises are not properly kept.

Reasons for Cleaning the Workplace

- Cleaning of dry floors, mostly to prevent workplace slips and falls.
- Disinfectants stop bacteria in their tracks, preventing the spread of infections and illness.
- Proper air filtration decreases hazardous substance exposures such as dust and fumes.
- Light fixture cleaning improves lighting efficiency.
- Using environmentally friendly cleaning chemicals that are safer for both personnel and the environment.
- Work environments are kept clean by properly disposing of garbage and recyclable items.

6.1.6 Lifting and Handling of Heavy Loads

Musculoskeletal Injuries (MSIs), such as sprains and strains, can occur while lifting, handling, or carrying objects at work. When bending, twisting, uncomfortable postures and lifting heavy objects are involved, the risk of injury increases. Ergonomic controls can help to lower the risk of injury and potentially prevent it.

Types of injuries caused while lifting heavy objects:

- Cuts and abrasions are caused by rough surfaces.
- Crushing of feet or hands.
- Strain to muscles and joints

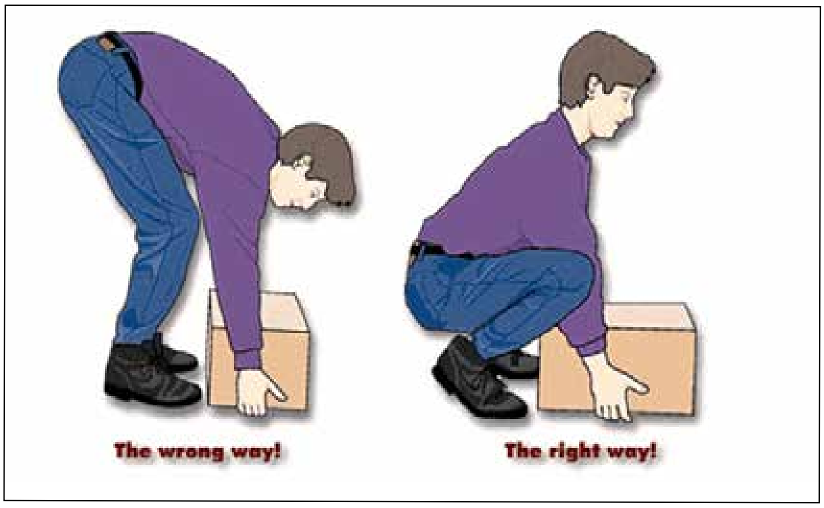


Fig. 6.1.5. Lifting loads echnique

Preparing to lift

A load that appears light enough to bear at first will grow increasingly heavier as one carries it further. The person carrying the weight should be able to see over or around it at all times.

The amount of weight a person can lift, depends on their age, physique, and health

It also depends on whether or not the person is used to lifting and moving hefty objects.

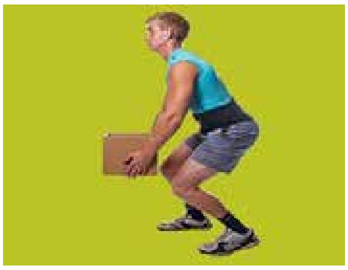
Common Causes of Back Injuries

The Most Common Causes of Back Injuries are:

1) **Inadequate Training:** The individual raising the load receives no sufficient training or guidance.
2) **Lack of awareness of technique:** The most common cause of back pain is incorrect twisting and posture, which causes back strain.
3) **Load size:** The load size to consider before lifting. If the burden is too much for one's capacity or handling, their back may be strained and damaged.
4) **Physical Strength:** Depending on their muscle power, various persons have varied physical strengths. One must be aware of their limitations.
5) **Teamwork:** The operation of a workplace is all about working together. When opposed to a single person lifting a load, two people can lift it more easily and without difficulty. If one of two people isn't lifting it properly, the other or both of them will suffer back injuries as a result of the extra strain.

Techniques for Lifting Heavy Objects

Technique	Demonstraton
1. Ensure one has a wide base of support before lifting the heavy object. Ensure one's feet are shoulder-width apart, and one foot is slightly ahead of the other at all times. This will help one maintain a good balance during the lifting of heavy objects. This is known as the Karate Stance.	
2. Squat down as near to the object as possible when one is ready to lift it, bending at the hips and knees with the buttocks out. If the object is really heavy, one may wish to place one leg on the floor and the other bent at a straight angle in front of them.	

3. Maintain proper posture as one begin to lift upward. To do so, one should keep their back straight, chest out, and shoulders back while gazing straight ahead.	
4. By straightening one's hips and knees, slowly elevate the thing (not the back). As one rises, they should extend their legs and exhale. Lift the heavy object without twisting the body or bending forward.	
5. Do not lift bending forward.	
6. Hold the load close to the body.	

7. Never lift heavy objects above the shoulder	
8. Use the feet (not the body) to change direction, taking slow, small steps.	
9. Set down the heavy object carefully, squatting with the knees and hips only.	

Table 6.1.1 Techniques for lifting he vy objects

[3]*Source:https://ww .braceability.ccom/blogs/articles/7-prop-heavavy-liftinechniques*

6.1.7 Safe Handling of Tools

Workers should be trained on how to use tools safely. When tools are misplaced or handled incorrectly by workers, they can be dangerous. The following are some suggestions from the National Safety Council for safe tool handling when they are not in use:

- Never carry tools up or down a ladder in a way that makes it difficult to grip them. Instead of being carried by the worker, tools should be lifted up and down using a bucket or strong bag.
- Tools should never be tossed but should be properly passed from one employee to the next. Pointed tools should be passed with the handles facing the receiver or in their carrier.
- When turning and moving around the workplace, workers carrying large tools or equipment on their shoulders should pay particular attention to clearances.
- Pointed tools such as chisels and screwdrivers should never be kept in a worker's pocket. They can be carried in a toolbox, pointing down in a tool belt or pocket tool bag, or in hand with the tip always held away from the body.
- Tools should always be stored while not in use. People below are put in danger when tools are left sitting around on an elevated structure, such as a scaffold. In situations when there is a lot of vibration, this risk increases.

6.1.8 Personal Protective Equipment

Personal protective equipment, or "PPE," is equipment worn to reduce exposure to risks that might result in significant occupational injuries or illnesses. Chemical, radiological, physical, electrical, mechanical, and other job dangers may cause these injuries and diseases.

PPE used for protection fom the following injuries are:

Injury Protecton	Protecton	PPE
Head Injury Protecton	Falling or flying objects, stationary objects, or contact with electrical wires can cause impact, penetration, and electrical injuries. Hard hats can protect one's head from these injuries. A common electrician's hard hat is shown in the figure below. This hard hat is made of nonconductive plastic and comes with a set of safety goggles.	
Foot and Leg Injury Protecton	In addition to foot protection and safety shoes, leggings (e.g., leather) can guard against risks such as falling or rolling objects, sharp objects, wet and slippery surfaces, molten metals, hot surfaces, and electrical hazards.	 
Eye and Face Injury Protecton	Spectacles, goggles, special helmets or shields, and spectacles with side shields and face shields can protect against the hazards of flying fragments, large chips, hot sparks, radiation, and splashes from molten metals. They also offer protection from particles, sand, dirt, mists, dust, and glare.	

Protecton against Hearing Loss	Hearing protection can be obtained by wearing earplugs or earmuffs. High noise levels can result in permanent hearing loss or damage, as well as physical and mental stress. Self-forming earplugs composed of foam, waxed cotton, or fibreglass wool usually fit well. Workers should be fitted for moulded or prefabricated earplugs by a specialist.	
Hand Injury Protecton	Hand protection will aid workers who are exposed to dangerous substances by skin absorption, serious wounds, or thermal burns. Gloves are a frequent protective clothing item. When working on electrified circuits, electricians frequently use leather gloves with rubber inserts. When stripping cable with a sharp blade, Kevlar gloves are used to prevent cuts.	
Whole Body Protecton	Workers must protect their entire bodies from risks such as heat and radiation. Rubber, leather, synthetics, and plastic are among the materials used in whole-body PPE, in addition to fire-retardant wool and cotton. Maintenance staff who operate with high-power sources such as transformer installations and motor-control centres are frequently obliged to wear fire-resistant clothes.	

Table 6.1.2. Personal protective equipment

Notes

UNIT 6.2: Fire Safety

Unit Objectives

By the end of this unit, participants will be able to:

1. List the types of fire and fire e extinguiss.

6.2.1 Fire Safety

Fire safety is a set of actions aimed at reducing the amount of damage caused by fire. Fire safety procedures include both those that are used to prevent an uncontrolled fire from starting and those that are used to minimise the spread and impact of a fire after it has started. Developing and implementing fire safety measures in the workplace is not only mandated by law but is also essential for the protection of everyone who may be present in the building during a fire emergency.

The basic Fire Safety Responsibilities are:

- To identify risks on the premises, a fire risk assessment must be carried out.
- Ascertain that fire safety measures are properly installed.
- Prepare for unexpected events.
- Fire safety instructions and training should be provided to the employees.

6.2.2 Respond to a Workplace Fire

- Workplace fire drills should be conducted on a regular basis.
- If one has a manual alarm, they should raise it.
- Close the doors and leave the fire-stricken area as soon as possible. Ensure that the evacuation is quick and painless.
- Turn off dangerous machines and don't stop to get personal items.
- Assemble at a central location. Ascertain that the assembly point is easily accessible to the employees.
- If one's clothing catches fire, one shouldn't rush about it. They should stop and descend on the ground and roll to smother the flames if their clothes catch fire.

6.2.3 Fire Extinguisher

Fire extinguishers are portable devices used to put out small flames or minimise their damage until fire-fighters arrive. These are maintained on hand in locations such as fire stations, buildings, workplaces, public transit, and so on. The types and quantity of extinguishers that are legally necessary for a given region are determined by the applicable safety standards.

Types of fire extinguishers are:

There are five main types of fire extinguishers:

1. Water.
2. Powder.
3. Foam.
4. Carbon Dioxide (CO2).
5. Wet chemical.

1. **Water:** Water fire extinguishers are one of the most common commercial and residential fire extinguishers on the market. They're meant to be used on class-A flames.

2. **Powder:** The L2 powder fire extinguisher is the most commonly recommended fire extinguisher in the Class D Specialist Powder category, and is designed to put out burning lithium metal fires.

3. **Foam:** Foam extinguishers are identified by a cream rectangle with the word "foam" printed on it. They're mostly water-based, but they also contain a foaming component that provides a quick knock-down and blanketing effect on flames. It suffocates the flames and seals the vapours, preventing re-ignition.

4. **Carbon Dioxide (CO2):** Class B and electrical fires are extinguished with carbon dioxide extinguishers, which suffocate the flames by removing oxygen from the air. They are particularly beneficial for workplaces and workshops where electrical fires may occur since, unlike conventional extinguishers, they do not leave any toxins behind and hence minimise equipment damage.

5. **Wet Chemical:** Wet chemical extinguishers are designed to put out fires that are classified as class F. They are successful because they can put out extremely high-temperature fires, such as those caused by cooking oils and fats.

Notes

UNIT 6.3: First Aid

Unit Objectives

By the end of this unit, participants will be able to:

1. Explain how the administer appropriate first aid to victims in case of bleeding, burns, choking, electric shock, poisoning
2. Explain how to administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock.

6.3.1 First Aid

First aid is the treatment or care given to someone who has sustained an injury or disease until more advanced care can be obtained or the person recovers.

The aim of first aid is to:

- Preserve life
- Prevent the worsening of a sickness or injury
- If at all possible, relieve pain
- Encourage recovery
- Keep the unconscious safe.

First aid can help to lessen the severity of an injury or disease, and in some situations, it can even save a person's life.

6.3.2 Need for First Aid at the Workplace

- In the workplace, first aid refers to providing immediate care and life support to persons who have been injured or become unwell at work.
- Many times, first aid can help to lessen the severity of an accident or disease.
- It can also help an injured or sick person relax. In life-or-death situations, prompt and appropriate first aid can make all the difference.

6.3.2 Need for First Aid at the Workplace

In the workplace, first aid refers to providing immediate care and life support to persons who have been injured or become unwell at work.

Many times, first aid can help to lessen the severity of an accident or disease.

It can also help an injured or sick person relax. In life-or-death situations, prompt and appropriate first aid can make all the difference.

6.3.3 Treating Minor Cuts and Scapes

Steps to keep cuts clean and prevent infectionsand scars:

- **Wash Hands:** Wash hands first with soap and water to avoid introducing bacteria into the cut and causing an infection. One should use the hand sanitiser if one is on the go.
- **Stop the bleeding:** Using a gauze pad or a clean towel, apply pressure to the wound. For a few minutes, keep the pressure on.
- **Clean Wounds:** Once the bleeding has stopped, clean the wound by rinsing it under cool running water or using a saline wound wash. Use soap and a moist washcloth to clean the area around the wound. Soap should not be used on the cut since it may irritate the skin. Also, avoid using hydrogen peroxide or iodine, as these may aggravate the wound.
- **Remove Dirt:** Remove any dirt or debris from the area. Pick out any dirt, gravel, glass, or other material in the cut with a pair of tweezers cleaned with alcohol.

6.3.4 Heart Atack

When the blood flow carrying oxygen to the heart is blocked, a heart attack occurs. The heart muscle runs out of oxygen and starts to die.

Symptoms of a heart attack can vary from person to person. They may be mild or severe. Women, older adults, and people with diabetes are more likely to have subtle or unusual symptoms.

Symptoms in adults may include:

- Changes in mental status, especially in older adults.
- Chest pain that feels like pressure, squeezing, or fullness. The pain is most often in the centre of the chest. It may also be felt in the jaw, shoulder, arms, back, and stomach. It can last for more than a few minutes or come and go.
- Cold sweat.
- Light-headedness.
- Nausea (more common in women).
- Indigestion.

- Vomiting.
- Numbness, aching or tingling in the arm (usually the left arm, but the right arm may be affected alone, or along with the left).
- Shortness of breath
- Weakness or fatigue, especially in older adults and in women.

First Aid for Heart Attack

If one thinks someone is experiencing a heart attack, they should:

- Have the person sit down, rest, and try to keep calm.
- Loosen any tight clothing.
- Ask if the person takes any chest pain medicine, such as nitro-glycerine for a known heart condition, and help them take it.
- If the pain does not go away promptly with rest or within 3 minutes of taking nitro-glycerine, call for emergency medical help.
- If the person is unconscious and unresponsive, call 911 or the local emergency number, then begin CPR.
- If an infant or child is unconscious and unresponsive, perform 1 minute of CPR, then call 911 or the local emergency number.

Notes

UNIT 6.4: Waste Management

Unit Objectives

By the end of this unit, participants will be able to:

1. Describe the concept of waste management and methods of disposing of hazardous waste.
2. List the common sources of pollutionand ways to minimize them.
3. Elaborate on electronic waste disposal procedures.

6.4.1. Waste Management and Methods of Waste Disposal

The collection, disposal, monitoring, and processing of waste materials is known as waste management. These wastes affect living beings' health and the environment. For reducing their effects, they have to be managed properly. The waste is usually in solid, liquid or gaseous form.

The importance of waste management is:

Waste management is important because it decreases waste's impact on the environment, health, and other factors. It can also assist in the reuse or recycling of resources like paper, cans, and glass. The disposal of solid, liquid, gaseous, or dangerous substances is the example of waste management.

When it comes to trash management, there are numerous factors to consider, including waste disposal, recycling, waste avoidance and reduction, and garbage transportation. Treatment of solid and liquid wastes is part of the waste management process. It also provides a number of recycling options for goods that aren't classified as garbage during the process.

6.4.2 Methods of Waste Management

Non-biodegradable and toxic wastes, such as radioactive remains, can cause irreversible damage to the environment and human health if they are not properly disposed of. Waste disposal has long been a source of worry, with population increase and industrialisation being the primary causes. Here are a few garbage disposal options.

1. **Landfills:** The most common way of trash disposal today is to throw daily waste/garbage into landfills. This garbage disposal method relies on burying the material in the ground.
2. **Recycling:** Recycling is the process of transforming waste items into new products in order to reduce energy consumption and the use of fresh raw materials. Recycling reduces energy consumption, landfill volume, air and water pollution, greenhouse gas emissions, and the preservation of natural resources for future use.

3. **Composting:** Composting is a simple and natural bio-degradation process that converts organic wastes, such as plant remnants, garden garbage, and kitchen waste, into nutrient-rich food for plants.
4. **Incineration:** Incineration is the process of combusting garbage. The waste material is cooked to extremely high temperatures and turned into materials such as heat, gas, steam, and ash using this technology.

6.4.3 Recyclable, Non-Recyclable and Hazardous Waste

1. **Recyclable Waste:** The waste which can be reused or recycled further is known as recyclable waste.
2. **Non-recyclable Waste:** The waste which cannot be reused or recycled is known as non-recyclable waste. Polythene bags are a great example of non-recyclable waste.
3. **Hazardous Waste:** The waste which can create serious harm to the people and the environment is known as hazardous waste.

6.4.4 Sources of Pollution

Pollution is defined as the harm caused by the presence of a material or substances in places where they would not normally be found or at levels greater than normal. Polluting substances might be in the form of a solid, a liquid, or a gas.

- **Point source of pollution:** Pollution from a point source enters a water body at a precise location and can usually be identified. Effluent discharges from sewage treatment plants and industrial sites, power plants, landfill sites, fish farms, and oil leakage via a pipeline from industrial sites are all potential point sources of contamination.

  Point source pollution is often easy to prevent since it is feasible to identify where it originates, and once identified, individuals responsible for the pollution can take rapid corrective action or invest in longer-term treatment and control facilities.
- **Diffuse source of pollution:** As a result of land-use activities such as urban development, amenity, farming, and forestry, diffuse pollution occurs when pollutants are widely used and diffused over a large region. These activities could have occurred recently or in the past. It might be difficult to pinpoint specific sources of pollution and, as a result, take rapid action to prevent it because prevention often necessitates significant changes in land use and management methods.

Pollution Prevention

Pollution prevention entails acting at the source of pollutants to prevent or minimise their production. It saves natural resources, like water, by using materials and energy more efficiently.

Pollution prevention includes any practice that:

- Reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal;
- Reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants (these practices are known as "source reduction");
- Improved efficiency in the use of raw materials, energy, water, or other resources, or Conservation is a method of safeguarding natural resources.
- Improvements in housekeeping, maintenance, training, or inventory management; equipment or technology adjustments; process or method modifications; product reformulation or redesign; raw material substitution; or improvements in housekeeping, maintenance, training, or inventory control.

6.4.5 Electronic Waste

Lead, cadmium, beryllium, mercury, and brominated flame retardants are found in every piece of electronic waste. When gadgets and devices are disposed of illegally, these hazardous compounds are more likely to contaminate the earth, pollute the air, and leak into water bodies.

When e-waste is dumped in a landfill, it tends to leach trace metals as water runs through it. The contaminated landfill water then reaches natural groundwater with elevated toxic levels, which can be dangerous if it reaches any drinking water bodies. Despite having an environmentally benign approach, recycling generally results in international shipment and dumping of the gadgets in pits.

Some eco-friendly ways of disposing of e-waste are:

- Giving back the e-waste to the electronic companies and drop-off points
- Following guidelines issued by the government
- Selling or donating the outdated technology-based equipment
- Giving e-waste to a certified e-waste recycler

Exercise

1. Name all five types of fire extinguishers.
2. Explain PPE in brief.
3. List the common workplace hazards.
4. Fill in the blacks:
   i. A "__________ sign" is a safety sign that prohibits behaviour that is likely to endanger one's health or safety.
   ii. _____________ entails acting at the source of pollutants to prevent or minimise their production.
   iii. ___________ is the treatment or care given to someone who has sustained an injury or disease until more advanced care can be obtained or the person recovers.
   iv. The threats caused by biological agents like viruses, bacteria, animals, plants, insects and also humans, are known as _________________.
   v. The workplace has to be administered as per the rules of the ____________________.

Notes

Skill India
कौशल भारत - कुशल भारत

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

N·S·D·C
National
Skill Development
Corporation
Transforming the skill landscape

ESSCI
Skilling India in Electronics

7. Employability and Entrepreneurship Skills

https://www.skillindiadigital.gov.in/content/list

Skill India
कौशल भारत - कुशल भारत

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

N·S·D·C
National
Skill Development
Corporation
Transforming the skill landscape

ESSCI
Skilling India in Electronics

8. Annexure

Annexure - QR Code

Chapter No.	Unit No.	Topic Name	Page No.	QR Code(s)	URL
1. Introduction to the role of Purchase Executive	Unit 1.1 Size and scope of the electronics industry and its various sub- sectors	1.1.1 Describe the size and scope of the electronics industry and its various sub-sectors	34		https://www.youtube.com/watch?v=A8LSc2GXn9E
		1.2.1 Define the basics of electronics and related concepts			https://www.youtube.com/watch?v=4sBgu_tUpil
		1.3.2 Career Pathways			https://www.youtube.com/watch?v=Vy9lQ65j6H4
		1.4.1 Responsibilities			https://www.youtube.com/watch?v=W8B2vhd-ThU
2. Collect Information about Materials and Suppliers (ELE/N7703)	Unit 2.1 Process to collect list of required materials from all departments	2.1 Process to collect list of required materials from all departments	72		https://www.youtube.com/watch?v=8kzXMXcP3Rs
		2.2 Procedure for approval of the purchase requirements			https://www.youtube.com/watch?v=IKALvTPCO_k
		2.3 Different methods for collecting information about various manufacturers and suppliers			https://www.youtube.com/watch?v=L05VyO_q7CU
		2.3 Different methods for collecting information about various manufacturers and suppliers			https://www.youtube.com/watch?v=ZSdp-8D4Rdo
		2.4 Explain how to compare the pricing details, specifications (quotations), payment terms, delivery time etc. received from different suppliers			https://www.youtube.com/watch?v=eoWZoI1AKEk

Chapter No.	Unit No.	Topic Name	Page No.	QR Code(s)	URL
7. Employability and Entrepreneurship Skills			166		https://www.skillindiadigital.gov.in/content/list

Skill India
कौशल भारत-कुशल भारत

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP

N·S·D·C
National Skill Development Corporation
Transforming the skill landscape

ESSCI
Skilling India in Electronics

Address: 155, 2nd Floor, ESC House, Okhla Industrial Area, Phase 3, New Delhi- 110020, India
Email: info@essc-india.org
Web: www.essc-india.org
Phone: +91 8447738501

Price: ₹