Processes, Procedures and Instructions

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PREFACE

This e-book aims to help students taking **DUE50082 – Technical English 2** to improve their understanding of technical English used in workshops and workplaces. It introduces common instruction structures, safety language and technical vocabulary related to machine usage. Through simple explanations and practical activities, students will practice giving and following instructions clearly and correctly, preparing them for real working environments. It is hoped that this e-book will help students to be better prepared to communicate effectively, follow standard operating procedures and perform tasks safely and confidently in real workplace settings.

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CONTENT

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1.1.1 Read and comprehend different types of processes and procedures.

PROCESS	PROCEDURE
A process is an ordered set of actions or steps taken to complete a task or produce an outcome	A procedure is a set of specific, detailed instructions that tells you how to do a task or operation step by step.

Term	Meaning	Focuses On
Process	A general series of steps to achieve a goal	*What needs to be done*
Procedure	Clear, detailed instructions on how to perform each step	*How each step is done*

DIFFERENCES

Examples of Processes in Technical Fields

No.	Technical Field	Example of Process
1	**Lathe Machine**	Turning a metal rod into a cylinder
2	**CNC Machine**	Programming and machining a part using G-code
3	**Welding**	Joining two metal plates using arc welding
4	**Concrete Work**	Mixing and pouring concrete for a foundation
5	**Circular Saw**	Cutting a wooden board to size
6	**Drilling Machine**	Drilling holes into metal or wood with precise depth
7	**Oscillating Sander**	Smoothing curved wood surfaces using a spindle sander
8	**3D Printing**	Printing a prototype part from a 3D model file
9	**Milling Machine**	Milling a slot or groove into a metal block
10	**Electrical Wiring**	Installing wiring for a switchboard or lighting system
11	**HVAC Installation**	Setting up an air conditioning unit in a building
12	**Plumbing**	Installing a sink and connecting water lines
13	**Automotive Maintenance**	Changing engine oil and oil filter in a car
14	**Painting (Spray Booth)**	Painting a car body using a spray gun
15	**Robotics**	Programming and testing a robotic arm to pick objects

Examples of Procedures in Technical Fields

No.	Technical Field	Example of Procedure
1	**Lathe Machine**	Procedure for turning a mild steel rod safely
2	**CNC Machine**	Procedure for setting up and running a CNC program
3	**Welding**	Procedure for performing MIG welding on metal sheets
4	**Concrete Mixing**	Procedure for mixing and pouring concrete on-site
5	**Circular Saw**	Procedure for cutting wood with a circular saw
6	**Drilling Machine**	Procedure for drilling accurate holes in metal
7	**Oscillating Sander**	Procedure for sanding curved edges with a spindle sander
8	**3D Printer**	Procedure for setting up and starting a print job
9	**Milling Machine**	Procedure for face milling a metal block
10	**Electrical Installation**	Procedure for wiring a basic lighting circuit
11	**HVAC System**	Procedure for installing an air conditioning unit
12	**Plumbing**	Procedure for installing a sink and connecting water supply
13	**Car Maintenance**	Procedure for changing a car's engine oil
14	**Spray Painting**	Procedure for preparing and painting a surface using a spray gun
15	**Robotics Programming**	Procedure for setting up and testing a robotic arm task

Examples of Machines Used in Technical Fields

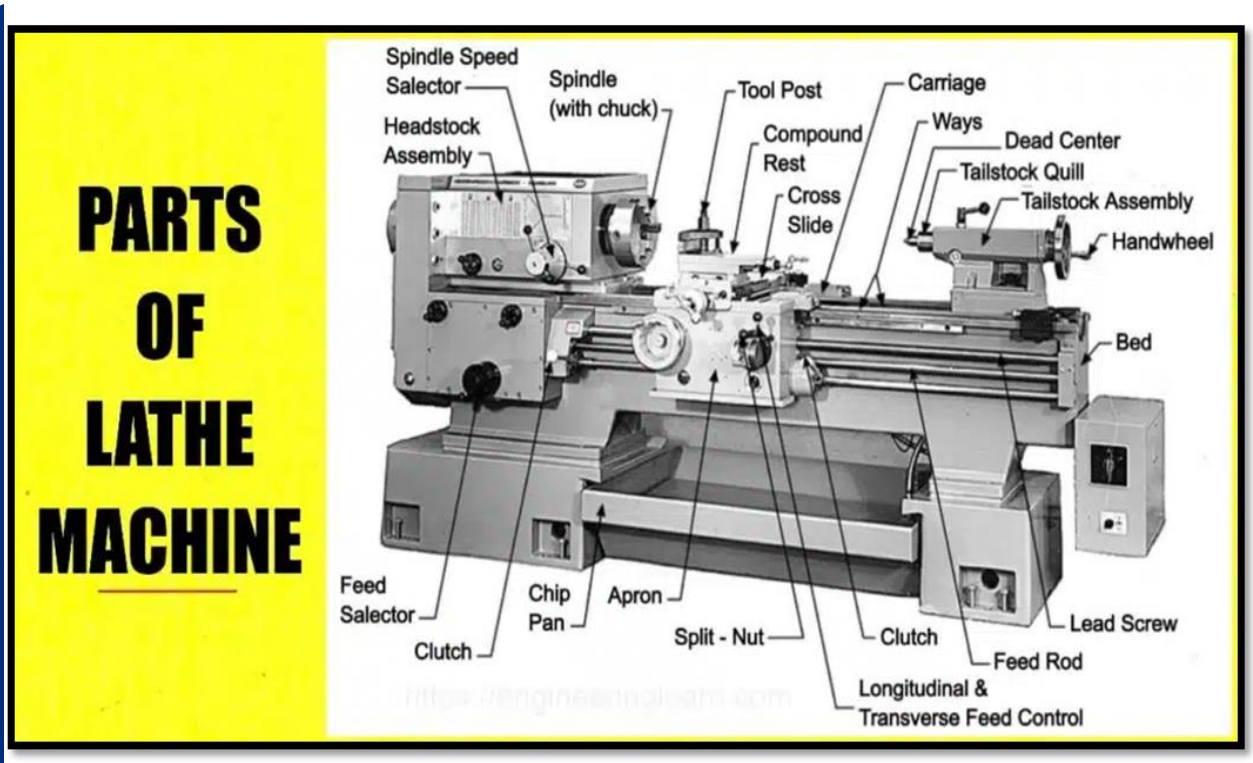
List 3 Common Machines in Your Lab and Its Usage

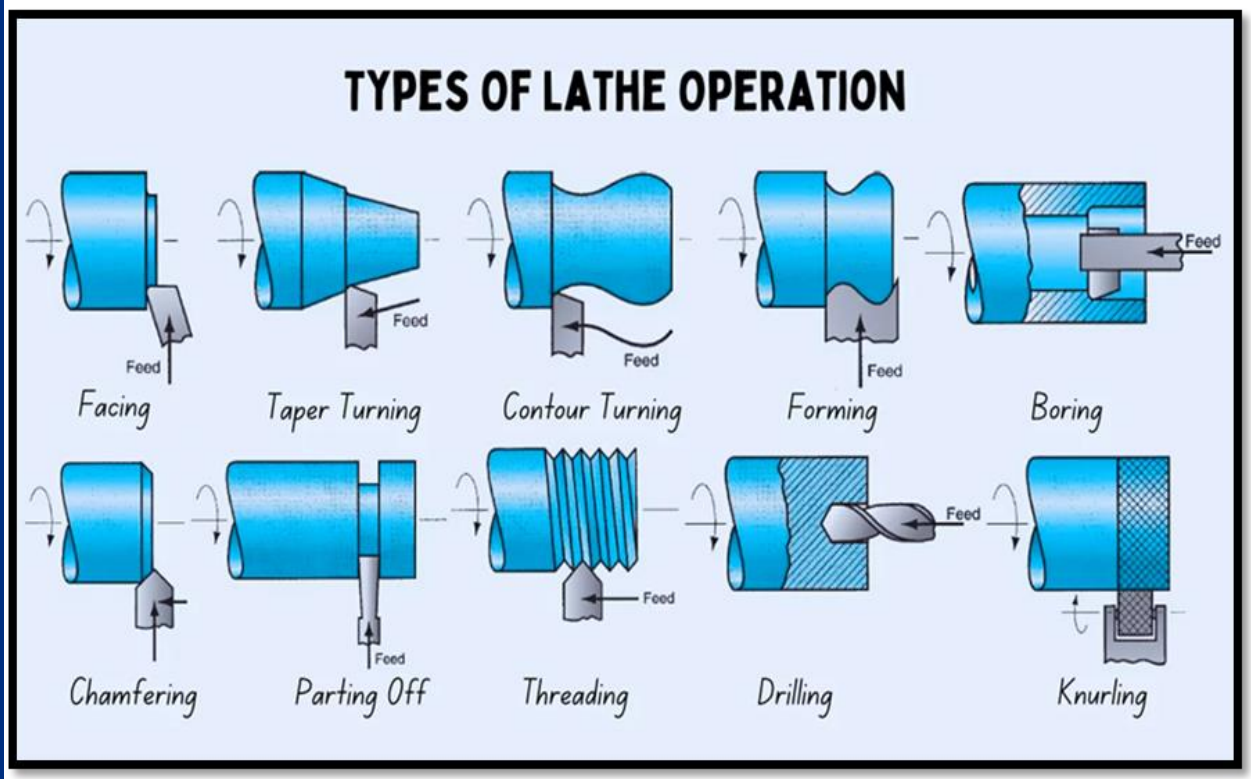
Machines	Usage

Below are the steps for handling a machine in the workshop. Answer (True) if it is the correct step to handle the machine and answer (False) if it is NOT the correct step to handle the machine.

No.	Step	Correct Answer
1	Do not wear safety gear (helmet, goggles, gloves, etc.)	
2	Start machine without reading the manual	
3	Read and understand the machine manual	
4	Check if the machine is working properly (no damage)	
5	Set the workpiece properly (tight and in position)	
6	Choose the correct tool for the job	
7	Switch on the machine	
8	Do a test run (check speed, sound, vibration)	
9	Operate the machine as needed	
10	Leave the machine running unattended	
11	Switch off and clean the machine after use	

LATHE MACHINE





WHAT IS A PROCESS IN LATHE MACHINE OPERATION?

A lathe process is a series of steps followed to perform machining tasks such as turning, facing, drilling, or threading on a rotating workpiece.

- Mounting the workpiece
- Setting speed and feed
- Installing the cutting tool
- Starting the machine
- Performing the operation
- Stopping and checking the result

💬 In Simple Terms for Students:

A process is "what we do step by step to get something done."

This is called a process because it is a series of actions done in a logical order to achieve a final product.

💬 **In Simple Terms for Students:**

A **process** is "what we do step by step to get something done."

WHAT IS A PROCEDURE IN LATHE MACHINE OPERATION?

A procedure in lathe machine operation is a step-by-step instruction that explains how to safely and correctly operate the machine to perform tasks like turning, facing, or drilling.

- Wear safety goggles and gloves.
- Turn off the power before mounting the workpiece.
- Use a chuck key to tighten the workpiece securely.
- Select the correct cutting tool and insert it in the tool post.
- Set spindle speed to 800 RPM using the control panel.
- Stand clear, turn on the machine, and begin facing the material.

In Simple Terms for Students:

A procedure is a step-by-step guide that tells you how to do something correctly and safely.

In Simple Terms for Students:

A procedure is a step-by-step guide that tells you how to do something correctly and safely.

ACTIVITY

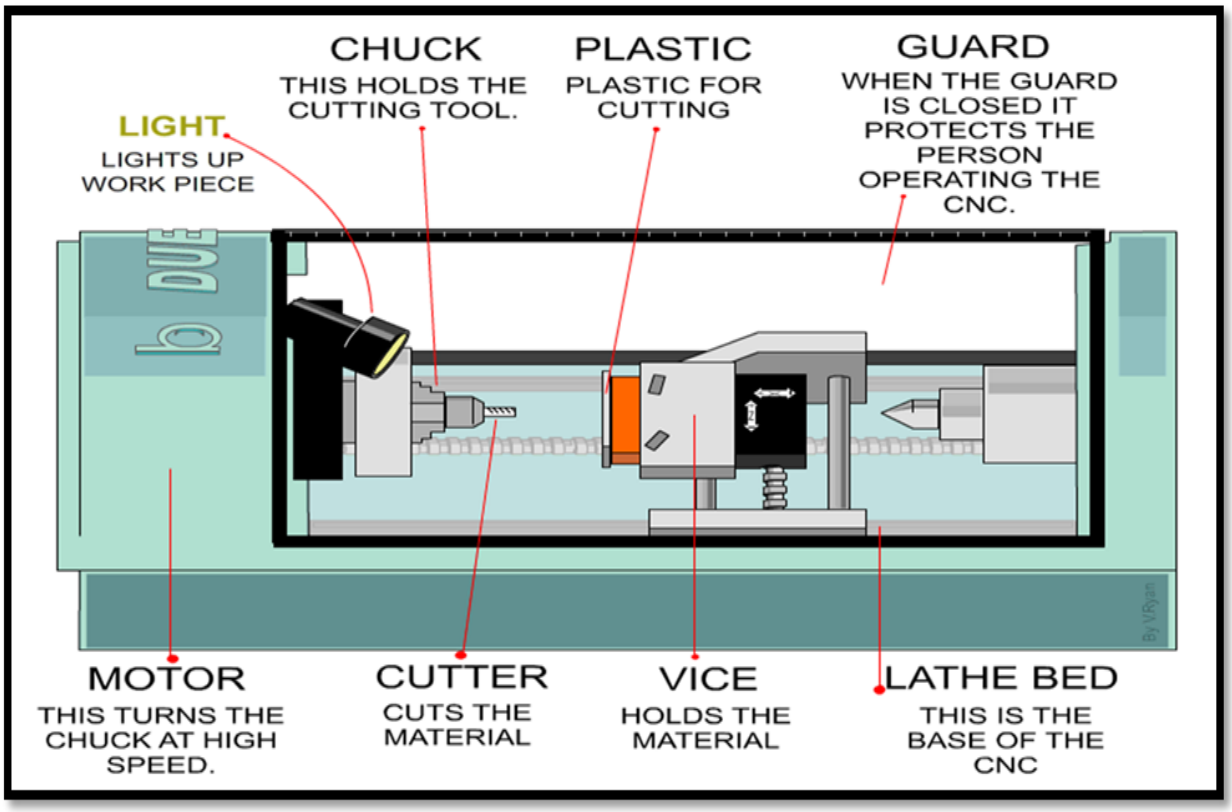
Let's Test Your Understanding

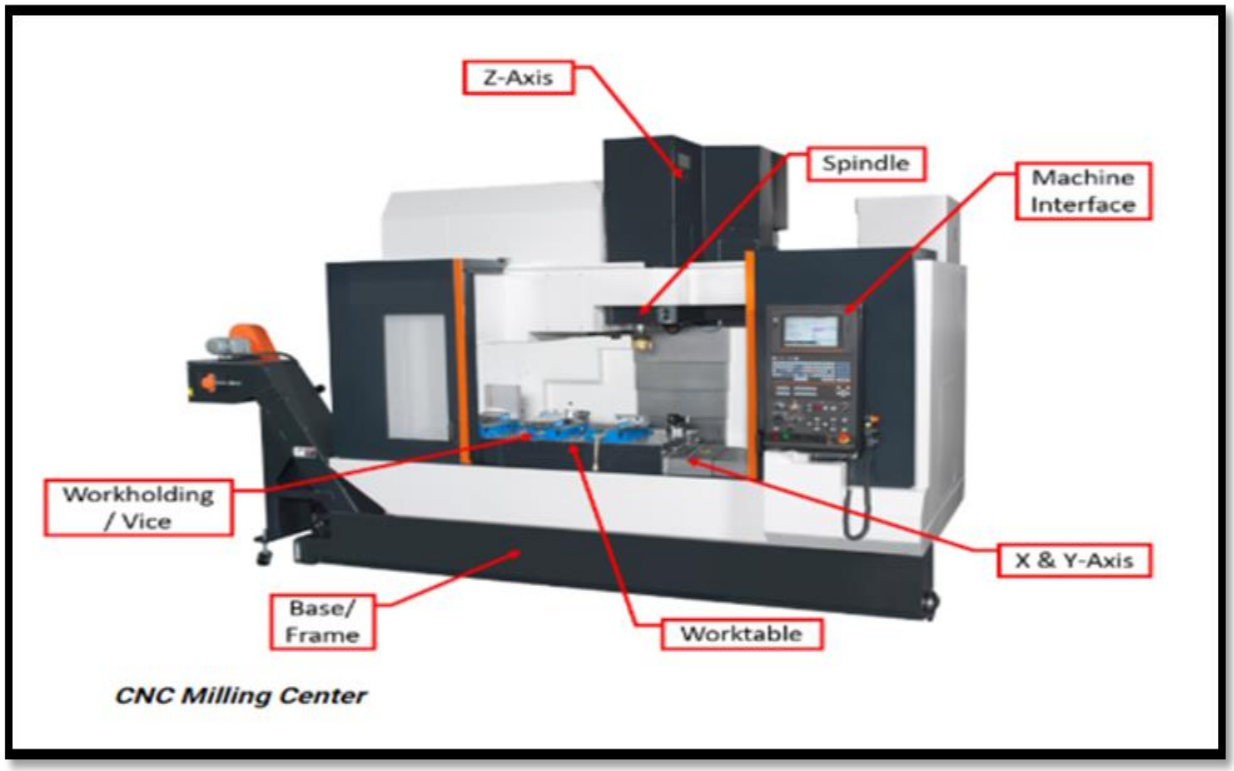
Drilling	Thread Cutting	Parting
Facing	Boring	Turning
Knurling	Taper Cutting	Chamfering

Activity 1: Fill in the blanks with the correct operations.

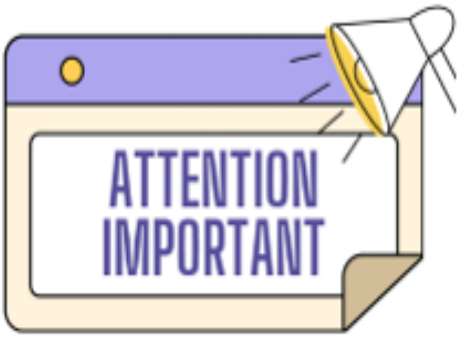
	Used to smoothen the end of the workpiece.
	Removes excess material to reduce the diameter.
	Cuts off a portion of the workpiece.
	Creates a hole at the center of the workpiece.
	Enlarges a drilled hole.
	Produces a patterned grip on the surface.
	Forms threads on the external or internal surface.
	Produces a conical shape.
	Bevels the edges of the workpiece.

CNC MACHINE


CHUCK
THIS HOLDS THE CUTTING TOOL.
PLASTIC
PLASTIC FOR CUTTING
GUARD
WHEN THE GUARD IS CLOSED IT PROTECTS THE PERSON OPERATING THE CNC.
LIGHT
LIGHTS UP WORK PIECE
MOTOR
THIS TURNS THE CHUCK AT HIGH SPEED.
CUTTER
CUTS THE MATERIAL
VICE
HOLDS THE MATERIAL
LATHE BED
THIS IS THE BASE OF THE CNC


Z-Axis
Spindle
Machine Interface
Workholding / Vice
X & Y-Axis
Base/ Frame
Worktable
CNC Milling Center

WHAT IS A PROCESS IN LATHE MACHINE OPERATION?



In CNC (Computer Numerical Control) machining, a **process** is a **series of steps that transform a raw material into a finished product using programmed machine operations.**

CNC Process Includes:

- Designing the part using CAD (Computer-Aided Design)
- Creating a CNC program using CAM (Computer-Aided Manufacturing) software
- Setting up the machine (installing tools, fixing the material)
- Loading the program into the CNC controller
- Running the machine to cut, drill, or shape the material
- Inspecting the finished part

CNC Milling Process

Step 1: Create a 3D part design in CAD software

Step 2: Convert the design into G-code (CNC language)

Step 3: Secure the material on the milling table

Step 4: Install the correct cutting tool

Step 5: Start the program and monitor the machining

Step 6: Check the dimensions after machining

Simple Definition for Students:

A **CNC process** is **what the machine and operator do step by step to make a part**, starting from a design and ending with a finished product.

WHAT iS A PROCEDURE iN LATHE MACHiNE OPERATiON?

In CNC machining, **procedures** are **detailed step-by-step instructions** that tell you **how to correctly and safely operate the CNC machine** to complete a specific task. A **procedure** in CNC refers to the **exact method** of performing tasks like setting up tools, loading programs, clamping materials, running operations, and maintaining safety.

🔧 **Example: CNC Machine Start-Up Procedure**

1.Wear proper safety gear (goggles, gloves, etc.)

2.Check emergency stop button is functional

3.Turn on the main power and machine control

4.Home the machine (send all axes to zero position)

5.Load the cutting tool into the spindle

6.Clamp the workpiece securely on the machine table

7.Load the CNC program (G-code) into the controller

8.Set tool offsets and work zero point

9.Dry run the program (without cutting) to check movement

10.Start the machining operation

11.Monitor the process and check for tool wear or errors

12.Stop the machine, remove the part, and inspect it

💬 **Simple Explanation for Students:**

A procedure in CNC tells you how to do each step of the job safely and correctly, like setting up the machine, loading the program, and checking the finished part.

Let's Test Your Understanding

Workpiece	Dry Run	Tool
Power	Safety Gear	Coolant
Control Panel	Program	Setup
	Zero Point	

Activity 2: Fill in the blanks with the correct operations.

1.Before starting the machine, always wear _____.

2.Turn on the machine by switching on the _____supply.

3.Load the correct CNC _____ into the controller.

4.Set up the _____ in the chuck or vice properly.

5.Install the correct cutting _____ and secure it tightly.

6.Set the _____ to define the starting position.

7.Use the _____to operate and monitor machine functions.

8.Run a _____ (test run) to ensure the program works correctly.

9.Turn on _____to keep the tool and workpiece cool during cutting.

10.After machining, remove and inspect the finished _____

OSCILLATOR MACHINE

PROCESS OF USiNG AN OSCiLLATiNG SPiNDLE SANDER (COMMON TYPE)

In the context of an **oscillator machine**, a **process** refers to the **step-by-step actions involved in setting up and operating the machine** to perform its function — usually sanding, polishing, or cutting with a **back-and-forth (oscillating) motion**.

A **process** in oscillator machine use is the **sequence of steps** taken to prepare, run, and complete a task using the machine, such as smoothing wood or metal surfaces.

Process of Using Oscillating Spindle Sander (Common Type)

1. **Choose the correct sanding drum** and install it on the spindle.
2. **Secure the workpiece** on the worktable.
3. **Adjust the table height** to match the sanding area.
4. **Turn on the machine** and allow it to reach full speed.
5. **Guide the workpiece slowly** against the rotating spindle.
6. **Move the workpiece steadily** to avoid burns or uneven sanding.
7. **Finish sanding**, turn off the machine, and wait for it to stop completely.
8. **Inspect the surface** and clean the area.

Simple Explanation for Students:

A **process** in an oscillator machine is the **order of actions** you follow — from setting up the drum to sanding and turning off the machine — to do the job safely and correctly.

PROCEDURE iN OSCiLLATOR MACHiNE OPERATiON?

A **procedure** for an oscillator machine is a **step-by-step instruction** that tells you **how to safely and correctly use the machine**, especially for tasks like sanding, polishing, or cutting using its back-and-forth motion.

A **procedure** explains **how to do each step** when operating the oscillator machine — including preparation, operation, and shutdown — to ensure safety, accuracy, and proper machine care.

Procedure of Operating an Oscillating Spindle Sander

1. **Wear safety gear** – goggles, dust mask, and hearing protection.
2. **Inspect the machine** – check for loose parts, worn sanding sleeves, or electrical issues.
3. **Select the appropriate sanding drum** size for the job.
4. **Install and tighten** the sanding drum securely on the spindle.
5. **Set the table height** to match the size of the workpiece.
6. **Connect dust extraction** if available.
7. **Secure the workpiece** on the table or use both hands to guide it steadily.
8. **Turn on the machine** and allow it to reach full speed.
9. **Begin sanding** by slowly moving the material against the drum with even pressure.
10. **Keep fingers clear** of the moving drum and avoid forcing the material.
11. **Turn off the machine** when done and wait for it to stop completely.
12. **Clean the machine area** and dispose of dust or debris properly.

Simple Student Explanation:

A procedure for an oscillator machine shows you exactly how to do each step safely and correctly — from setting it up to sanding and cleaning up.

Adjust	**Wear**	**Check**
Start	**Monitor**	
Clean	**Turn On**	**Remove**
Secure	**Stop**	

Activity 3: Fill in the blanks with the correct operations.

1._____ appropriate PPE (goggles, gloves, ear protection).

2._____ the area around the machine.

3._____ the machine for any loose parts or abnormalities.

4._____the main power supply.

5._____ the workpiece firmly using the clamping device.

6._____ the speed and oscillation settings as required.

7._____ the oscillator machine.

8._____ the operation and maintain a safe distance.

9._____ the machine and turn off the main power when finished.

10._____ the workpiece and inspect for accuracy.

CIRCULAR SAW

What is a process in Circular Saw Operation?

In the context of using a **circular saw**, a **process** refers to the **sequence of steps taken to cut a material (usually wood, plastic, or metal) accurately and safely** using the saw.

A CIRCULAR SAW PROCESS IS A SERIES OF ACTIONS THAT INVOLVE SETTING UP, MEASURING, CUTTING, AND FINISHING A WORKPIECE USING A CIRCULAR SAW.

PROCESS OF USING A CIRCULAR SAW

- Mark the cutting line on the workpiece using a pencil and ruler.
- Set the blade depth based on the thickness of the material.
- Secure the material using clamps or on a stable surface.
- Wear safety gear (goggles, gloves, ear protection).
- Check the saw for blade sharpness and safety guard function.
- Line up the blade with the marked cutting line.
- Turn on the saw and let it reach full speed.
- Cut through the material steadily, following the line.
- Turn off the saw and wait for the blade to stop completely.
- Inspect the cut and clean the area.

In Simple Words for Students:

A **process in circular saw use** is what you do step by step — from marking the material to finishing the cut — to make sure your work is **accurate and safe**.

What is a procedure in Circular Saw Operation?

A **procedure** for using a circular saw is a **detailed, step-by-step guide** on **how to safely and correctly use the tool** to cut materials like wood, plastic, or metal.

✅ **Definition:**

A **procedure** is a set of **specific instructions** that explain **how each step** of the circular saw operation should be done properly.

PROCEDURE FOR OPERATING A CIRCULAR SAW

- Put on safety gear (safety goggles, hearing protection, gloves).
- Inspect the saw for damage and ensure the blade is sharp and properly installed.
- Set the blade depth — it should be just slightly deeper than the thickness of the material.
- Mark the cutting line clearly on the material using a ruler or measuring tape.
- Secure the material using clamps or place it on a stable surface.
- Hold the saw firmly with both hands.
- Align the saw blade with the cutting line before turning it on.
- Turn on the saw and wait for it to reach full speed.
- Make the cut slowly and steadily, following the cutting line.
- Release the trigger and wait for the blade to stop before setting the saw down.
- Check the cut, and clean up any sawdust or debris.

Simple Explanation for Students:

A **procedure** tells you **how to use the circular saw the right way**, step by step, so the job is done **safely and correctly.**

ACTIVITY

CONCRETE MIXER

Can you rearrange the process of using Concrete Mixer?

Check the mix for proper texture and uniformity.	
Measure the materials (cement, sand, gravel, water) based on the mix ratio (e.g., 1:2:4).	**1.**
Add sand and **coarse aggregates** gradually.	
Add water into the mixer drum.	
Start the mixer and let the drum rotate.	

Mix for the required time (usually 2–3 minutes) to ensure consistency.	
Add cement into the drum.	
Clean the mixer drum immediately after use.	
Discharge the concrete into a wheelbarrow or bucket.	

1.1.2 Identify the sequence of processes or procedures presented in linear or non-linear forms

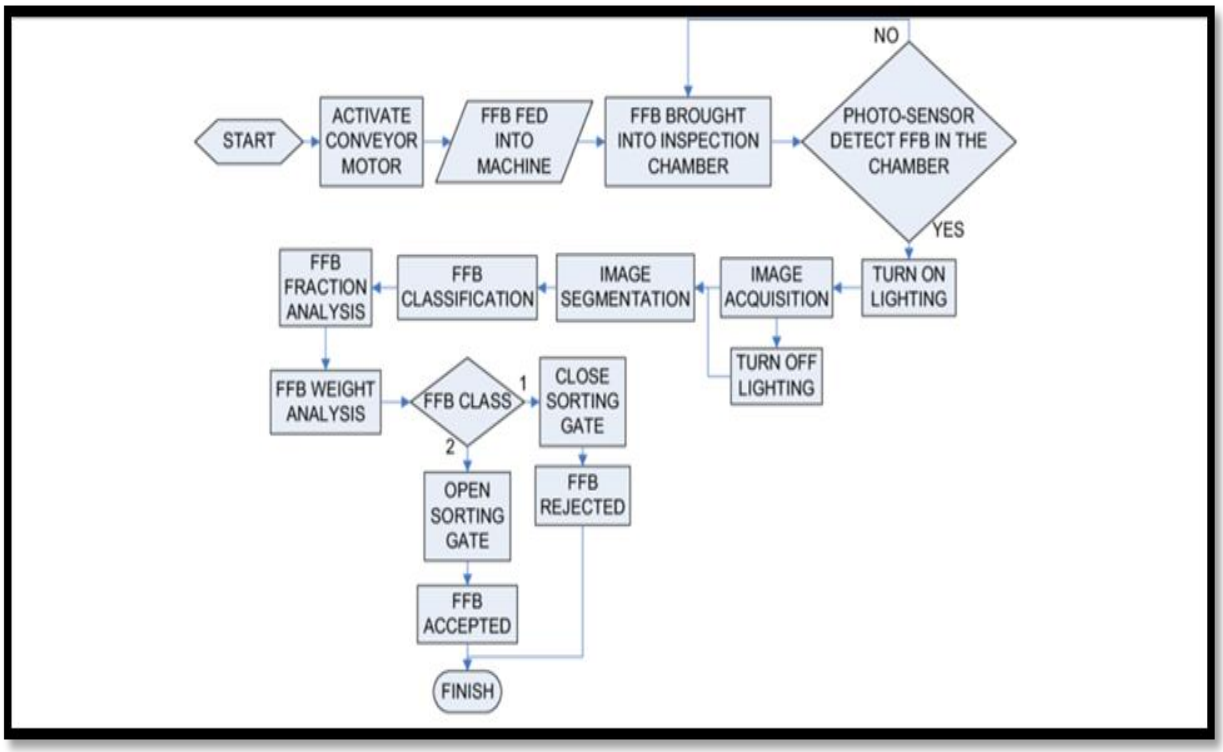
Linear Form:

- Information is presented in a straight line or step-by-step (e.g., numbered instructions or paragraphs).

There are six simple steps to remember when changing a car tyre. **Firstly**, begin by loosening the wheel bolts with the tyre iron by turning iron counter clockwise. Do not remove bolts completely. **Secondly,** insert the car jack underneath the car jack points making sure it lines up with groove from jack. Make sure insert jack lever and raise car by turning lever clockwise. **After that**, once car tyre is lifted off the ground, continue to unbolt the nuts the rest of the way and pull off tyre. Pull towards yourself. **Next** , put replacement tyre on the car and secure with bolts. Screw bolts on with tyre iron to hold the tyre in place. **Then**, lower car by turning jack lever counter clockwise until jack is fully closed and car is on the ground. Tighten wheels bolts by turning tyre iron clockwise. **Lastly**, tighten one bolt at the time by alternating from one to the other in a 'x' direction.

Non-linear Form:

- Information is shown using diagrams, flowcharts, tables, or mind maps.



LINEAR FORM	NON-LINEAR FORM
·Information is presented in a straight line or step-by-step (e.g., numbered instructions or paragraphs).	·Information is shown using diagrams, flowcharts, tables, or mind maps.

- Look for any process or procedure that is related to your field of study (one in linear form and one in non-linear form)
- This could be a process used in real-world practice, a workflow, a method, or a step-by-step procedure commonly applied in your area.

1.1.3 Write a description of a process or procedure based on a non-linear form using appropriate language forms

DEFINITION

Sequence connectors are **words or phrases** that show the **order of steps** in a **process** or **procedure**.

Why use Sequence Connectors?

- To **organize steps clearly**
- To help the reader **follow instructions**
- To ensure **safety and accuracy** in technical tasks

Common Sequence Connectors

Step Order	Connector Examples
◆ First step	First, To begin with, Initially
◆ Middle steps	Then, Next, After that, Subsequently, Meanwhile, During this step
◆ Final step	Finally, Lastly, To finish, In the end

How to Use in Technical Contexts

Example – Lathe Machine Process

- **First**, mount the workpiece securely on the chuck.
- **Next**, select and install the cutting tool.
- **Then**, set the speed and feed rate.
- **After that**, start the machine and begin turning.
- **Finally**, stop the machine and inspect the part

Example – Concrete Mixing Procedure

- **To begin with**, wear safety gear.
- **Then**, add half of the water into the mixer.
- **Next**, pour in the cement, sand, and aggregates.
- **After that**, add the remaining water.
- **Lastly**, discharge the mix and clean the drum.

Tips For Students

- Use **one connector per step** to keep instructions clear.
- Always start with "**First**" **or** "**To begin with**".
- End your procedure with "**Finally**" or "**In the end**".
- Match **verbs** with each step (e.g., "Check", "Install", "Turn on").

Useful for Writing:

- **User manuals**
- **Standard Operating Procedures (SOPs)**
- **Workshop instructions**
- **Safety briefings**

How to Describe Process and Procedures in Technical Fields

1. Understand the Difference

Term	Definition	Focus On
Process	A general sequence of steps to complete a technical task	**What is done**
Procedure	A detailed set of instructions explaining **how** to carry out each step	**How it's done safely and correctly**

2. Use Sequence Connectors

Use **sequence connectors** to show the **order of steps** clearly:

Position	Examples
Beginning	First, To begin with, Initially
Middle	Next, Then, After that, Meanwhile
Ending	Finally, To finish, In the end

3. Writing a Process (Focus: What Happens)

- Keep it **short and clear**.
- Use **simple past tense** or **imperative verbs**.
- Focus on the **main steps**, not tiny details.

Example (Lathe Machine – Turning Process):

1. First, the workpiece is mounted in the chuck.
2. Next, the tool is selected and positioned.
3. Then, the machine is started and rough turning is performed.
4. Finally, finish turning is done to get the correct size.

4. Writing a Procedure (Focus: How to Do

- Include **safety precautions**.
- Give **specific details** (tools, measurements, settings).
- Use **imperative verbs** (Wear, Set, Turn on, Check).

Example (Lathe Machine – Turning Procedure):

1. Wear safety goggles and gloves.
2. Inspect the lathe machine for loose parts.
3. Mount the workpiece securely in the chuck.
4. Install the correct cutting tool.
5. Set spindle speed and feed rate.
6. Start the machine and perform turning operations.
7. Measure the finished part and clean the machine.

ACTIVITY

1.Write the correct sequence connectors for operating lathe machine.

1._____ Mount the workpiece securely on the chuck.

2._____ Set the desired speed and feed on the control panel.

3._____ Select and install the correct cutting tool.

4._____ Move the tool post to the correct position.

5._____ Start the machine and begin the facing operation.

6._____ Monitor the operation and adjust as needed.

7._____ Turn off the lathe and inspect the finished workpiece.

2.Write the process of operating lathe machine based on the non-liner form given.

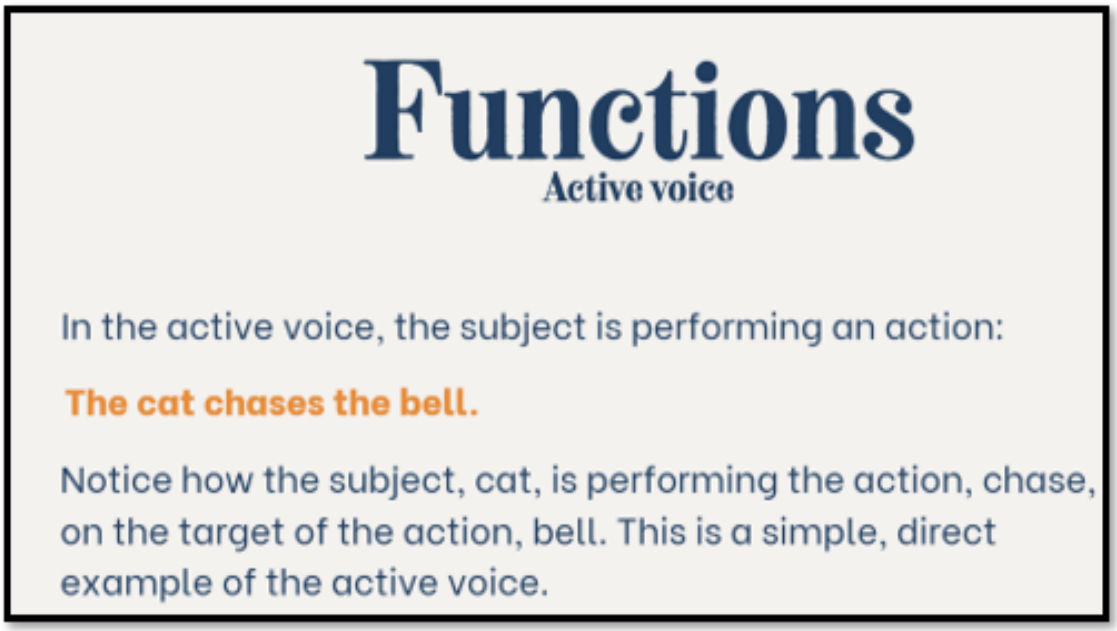
3.Transfrom "How to Perform Work in a Technical Lab" using non-Linear Form

1. **Follow Lab Safety Rules**
2. **Read and Understand the Task**
3. **Prepare Tools and Materials**
4. **Perform Pre-Operation Checks**
5. **Execute the Task**
6. **After Work Completion**
7. **Submit and Report**

Using Active and Passive Voice

DEFINITION

In **active voice**, the **subject does the action.**



✅ **Structure**:
Subject + Verb + Object

🔧 **Example (Procedure)**:

- **The operator** starts the lathe machine.
- **You** should tighten the bolts securely.

✔ **Use active voice when:**

- Giving instructions in **procedures**
- Emphasizing **who is responsible**
- Promoting **clarity and directness**

DEFINITION

In **passive voice**, the **action is done to the subject**.

Functions

Passive voice

In the passive voice, the action's target, ball, is positioned first as the focus of the sentence. The sentence gets flipped, and the subject is now being acted upon by the verb. In other words, the subject is passive:

The bell is being chased by the cat.

✅ **Structure**:
Object + Passive Verb (be + past participle) + (by Agent)

🔧 **Example (Process):**

- The workpiece **is mounted** on the chuck.
- The surface **was cleaned** before machining.

✔ **Use passive voice when:**

- Describing **processes** (focus on **what happens**, not who does it)
- The doer is **unknown or unimportant**
- Maintaining a **formal tone**

3. When to Use Which Voice

Purpose	Preferred Voice	Example
Procedure (how to do)	✅ **Active Voice**	"Turn off the machine." / "Tighten the bolts."
Process (what happens)	✅ **Passive Voice**	"The mixture is poured into the mold." / "The part is machined to size."

4. Conversion Examples

Active Voice (Procedure)	Passive Voice (Process)
Clean the surface.	The surface is cleaned.
Start the machine.	The machine is started.
Adjust the feed rate.	The feed rate is adjusted.
The operator measures the part.	The part is measured (by the operator).

5. Tips for Students

- ✅ Use **active voice** in **checklists, manuals, and SOPs (Standard Operating Procedures)**.
- ✅ Use **passive voice** in **technical reports, lab results, and process descriptions**.
- 🔄 **Mix both voices** when needed, but stay consistent within the same section.

PART A: Change Active to Passive Voice

Instructions: Convert the following **active voice** sentences into **passive voice**.

1. The technician checks the oil level.

   👉 _____

2. The operator starts the lathe machine.

   👉 _____

3. The worker mixes the concrete.

   👉 _____

4. The engineer calibrates the CNC machine.

   👉 _____

5. The student sands the wooden surface.

   👉 _____

PART B: Change Passive to Active Voice

Instructions: Convert the following **passive voice** sentences into **active voice**.

1. The machine is cleaned every day.

   👉 _____

2. The holes were drilled accurately.

   👉 _____

3. The part is inspected by the supervisor.

   👉 _____

4. The workpiece was mounted on the chuck.

   👉 _____

5. The speed is adjusted before cutting.

   👉 _____

PART C: Mixed Practice (Circle A for Active or P for Passive)

Instructions: Circle whether the sentence is in **Active (A)** or **Passive (P)**.

1. The operator tightened the bolts. (A / P)
2. The rod was cut using a hacksaw. (A / P)
3. The team installs the electrical panel. (A / P)
4. The metal is polished after welding. (A / P)
5. The supervisor approved the process. (A / P)

✍ PART D: Your Own Sentences

Write **two active** and **two passive** voice sentences related to technical tasks (e.g., CNC, lathe, drilling).

1. Active: _____
2. Active: _____
3. Passive: _____
4. Passive: _____

1. Which of the following sentences is written in active voice?

A. The machine was operated by the technician.
B. The technician operated the machine.
C. The materials were delivered yesterday.
D. The power supply was switched off.

2. Which sentence uses active voice correctly?

A. The measurements were recorded by the assistant.
B. The assistant recorded the measurements.
C. The tool was cleaned after use.
D. The system was tested thoroughly.

3. Convert this sentence to active voice:
"The component was installed by the engineer."

A. The engineer was installing the component.
B. The engineer has installed the component.
C. The engineer installed the component.
D. The engineer had been installed the component.

4. Which is the active voice form of: "The system is monitored by the supervisor every hour"?

A. The system monitors the supervisor every hour.
B. The supervisor monitored the system every hour.
C. The supervisor monitors the system every hour.
D. The supervisor is monitoring the system every hour.

5. Why is active voice preferred in technical writing?

A. It sounds more casual
B. It hides who is responsible for the task
C. It is more direct and clearer
D. It uses fewer technical terms

1.1.4 Present Information Orally Using Appropriate Language

- Explain procedures clearly and confidently.
- Use technical terms, sequence words, and correct sentence structures.
- Practice using visuals or models for support.

Presenting a Process/Procedures in Technical Works

1. Understand the Purpose

- Determine the **goal** of the process: What outcome should the reader achieve?
- Identify the **audience**: Technical background? Beginners?

2. Use a Clear Structure

a. Title

- Provide a **precise and descriptive title**, e.g., *"Procedure for Calibrating a CNC Lathe"*.

b. Introduction (Optional but Helpful)

- Briefly explain:
  - The **objective** of the process.
  - **Why** the process is important.
  - Any **prerequisites** (e.g., skills, tools, safety).

c. Materials/Tools/Requirements

- List all items needed **before** starting.
- Use **bullets** or a **table** for clarity.

d. Step-by-Step Instructions

- Number each step for **sequence** clarity.
- Use **imperative verbs** (e.g., "Insert," "Press," "Turn").
- Keep each step:
  - **Short** and **precise**
  - One action per step if possible
- Include diagrams/photos when helpful.

3. Use Visual Aids

- Diagrams, illustrations, or labeled photos.
- Ensure images are **high-resolution** and **clearly labeled**.

Here are **useful phrases** for presenting a **process in technical works**, organized by purpose:

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1. Introducing the Process

- "This procedure outlines the steps required to..."
- "The purpose of this process is to..."
- "Before beginning, ensure that..."
- "This guide explains how to carry out..."

---

2. Listing Tools or Materials

- "The following materials are required:"
- "Ensure you have the following tools before starting:"
- "Prepare the equipment as listed below:"

---

3. Starting the Steps

- "Step 1: Begin by..."
- "First, make sure to..."
- "Initially, check that..."
- "Start with the following action:"

4. Continuing the Steps

Next, proceed to..."

- "Once completed, move on to..."
- "Then, carefully..."
- "At this stage, you should..."
- "Following that, perform the next operation..."

5. Giving Specific Instructions

- "Use [tool] to..."
- "Apply pressure to..."
- "Align the component with..."
- "Rotate the knob until it..."
- "Secure the part by tightening..."

6. Highlighting Safety / Caution

- "⚠ Caution: Do not attempt to..."
- "Ensure the machine is switched off before..."
- "Wear safety equipment to prevent..."
- "Failure to follow this step may result in..."

7. Confirming Completion

- "Check that the [part] is firmly in place."
- "Verify the setup by..."
- "You should now see..."
- "This completes the setup/installation."

8. Optional / Additional Notes

- "Note: This step may vary depending on..."
- "Optional: If desired, you can also..."
- "In some cases, it may be necessary to..."

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9. Troubleshooting / Next Steps

- "If the system fails to respond, try..."
- "Should any errors occur, refer to..."
- "To proceed with the next phase, begin by..."

1.1.5 Listen and Respond Appropriately to Instructions and Requests

- **Definition:**
  An **instruction** is a **clear and direct statement** that tells someone **what to do** and **how to do it**.

In Simple Terms:

Instruction = Direction or command to perform a task.

Examples of Instructions:

- **"Turn on the machine."**
- **"Tighten the screw to 20 Nm."**
- **"Insert the key into the ignition."**

Why Are Instructions Important?

- Ensure **safety**.
- Improve **efficiency**.
- Maintain **quality**.
- Help in **training** and **communication**.

Types of Instructions in Technical Work

1. **Written Instructions** – Manuals, SOPs (Standard Operating Procedures), labels.
2. **Spoken Instructions** – Given by supervisors, trainers, or co-workers.
3. **Visual Instructions** – Diagrams, symbols, warning signs.

Giving Instructions in Technical Work

a. Be Clear and Precise

- Use simple, direct language.
- Avoid ambiguity.
- Example: *"Tighten the bolt to 50 Nm using a torque wrench."*

b. Use Sequential Steps

- Present steps in logical order.
- Numbered or bulleted lists are best.
- Example:
    1. Turn off the power supply.
    2. Disconnect the cable.
    3. Remove the protective casing.

c. Include Necessary Technical Details

- Mention tools, measurements, materials, and safety precautions.
- Example: *"Use a 10mm hex key to loosen the screw."*

d. Use Imperative Sentences (Commands)

- Start sentences with verbs: *"Insert," "Measure," "Check," "Assemble."*
- Example: *"Measure the shaft diameter using a Vernier caliper."*

e. Support with Visuals if Possible

- Diagrams, photos, or labels enhance clarity.
- Especially useful for mechanical tasks or electronic circuits.

Responding to Instructions

a. Listen or Read Carefully

- Pay attention to keywords, measurements, and conditions.
- Repeat or reread if unsure.

b. Seek Clarification When Necessary

- Ask questions: *"Do you mean I should use the small or large clamp?"*
- Never assume when safety or quality is involved.

c. Follow Instructions Exactly

- Stick to the sequence.
- Use the specified tools and methods.

d. Provide Feedback or Confirmation

- Let the instructor/supervisor know when a task is complete.
- Report any issues or deviations.
- Example: *"I've completed step 4, but the part doesn't fit—should I proceed?"*

e. Document Your Actions (if needed)

- For traceability in technical work: write notes, fill logs, or update checklists.

COMMON TECHNICAL VOCABULARY

- **Check**, **Inspect**, **Install**, **Align**, **Assemble**, **Secure**, **Verify**, **Power down**, **Calibrate**, **Measure**, **Replace**, **Report**

A **request** in technical work is a **polite or formal way of asking** someone to **do something**, **provide something**, or **allow something** related to a technical task or operation.

In Simple Terms:

Request = Asking for help, action, permission, or information.

Examples of Requests in Technical Work:

- **"Could you pass me the torque wrench?"**
- **"May I access the machine for inspection?"**
- **"Can you check the pressure gauge for me?"**
- **"Please send me the updated circuit diagram."**

Types of Requests in Technical Settings:

1. **Action Request** – Asking someone to perform a task
   "Can you reset the machine?"
2. **Information Request** – Asking for data or clarification
   "Could you explain how this valve works?"
3. **Permission Request** – Asking to access or modify something
   "May I use the lathe for a test run?"
4. **Resource Request** – Asking for tools, materials, or documents
   "Please provide the safety manual."

Why Are Requests Important in Technical Work?

- Support **teamwork** and **coordination**
- Avoid **misunderstandings**
- Promote a **safe and respectful workplace**
- Ensure **smooth workflow**

1.1.6 Give Instructions on How to Perform a Task

Common Structures for Giving Instructions

1. Direct Imperatives (simple command)

- Turn on the main power.
- Wear your safety goggles.
- Insert the tool correctly.
- Check the oil level.

2. Negative Imperatives (do not / do not)

- Do not touch the hot surface.
- Do not start the machine without PPE.
- Do not force the lever.

1.1.6 Give Instructions on How to Perform a Task

3. Polite Imperatives (softened for workplace use)

•Please make sure you wear gloves.
•Kindly switch off the power after use.
•Always ensure the tool is tightened.
•Be careful not to damage the part.

4. Sequenced Imperatives (step-by-step)

•First, switch on the power.
•Next, check the coolant system.
•Then, adjust the speed setting.
•Finally, press the start button.

Examples in Technical Context

Machine Operation
•Put on your helmet and gloves.
•Switch on the lathe.
•Set the speed to 800 RPM.
•Place the workpiece in the chuck.
•Tighten the chuck firmly.
•Do not leave the machine unattended.

Computer/IT Setup
•Plug in the power cable.
•Connect the monitor to the CPU.
•Turn on the computer.
•Install the required software.
•Restart the system.
•Don't shut down during the update.

Workshop Safety
•Keep your tools organized.
•Wear ear protection.
•Report any damaged equipment.
•Don't run in the workshop.
•Clean your workstation after finishing.

1. **Write FIVE (5) imperative instructions**

_____

_____

_____

_____

_____

2. **Write FIVE (5) negative imperative instructions**

_____

_____

_____

_____

_____

1.1.6 Give Instructions on How to Perform a Task

Giving instructions effectively is an essential skill in technical environments like workshops, labs, factories, or engineering teams. Here's a simple guide to help you give clear, correct, and confident instructions.

1. Be Clear and Direct

- Use **simple and specific language**.
- Avoid vague terms like "do it properly" — instead, say *"tighten the bolt to 50 Nm using a torque wrench."*

✔ **Example:**

❌ "Fix the machine."

✅ "Replace the worn-out belt on the motor and check the tension."

2. Use the Correct Order (Sequence)

- Give instructions **step by step** in the correct sequence.
- Use numbers or transition words (first, then, next, finally).

✔ **Example:**

1. Turn off the power supply.
2. Remove the machine cover.
3. Inspect the internal gears.

3. Use Action Verbs (Imperative Form)

Start each instruction with a verb (command form):

Verb	Example Instruction
Check	*Check the oil level before starting.*
Install	*Install the filter into the housing.*
Tighten	*Tighten all screws with a torque wrench.*
Measure	*Measure the gap using a feeler gauge.*

1. What is the primary purpose of giving instructions in a technical field?

A. To impress others with technical vocabulary
B. To describe theories in detail
C. To provide clear steps for completing a task
D. To persuade others to follow your opinion

2. Which of the following is the most appropriate opening phrase for a technical instruction?

A. "In my opinion..."
B. "Let me tell you a story..."
C. "First, plug in the machine."
D. "It would be nice if..."

3. Which of the following is an example of a clear and direct command used in technical instructions?

A. "You might want to check the oil level."
B. "Check the oil level before starting the engine."
C. "Do you think the oil level is okay?"
D. "I guess you should check the oil."

4. What is the correct sequence signal word for the final step in a set of instructions?

A. First
B. Then
C. Next
D. Finally,

5. Which of the following sentences shows proper use of sequencing in technical instructions?

A. "Start the lathe. Before turning it on, secure the workpiece."
B. "Secure the workpiece. Then, start the lathe."
C. "You could turn it on after maybe securing something."
D. "I think turning it on is good, after all."

6. Which phrase best adds a safety warning to a technical instruction?

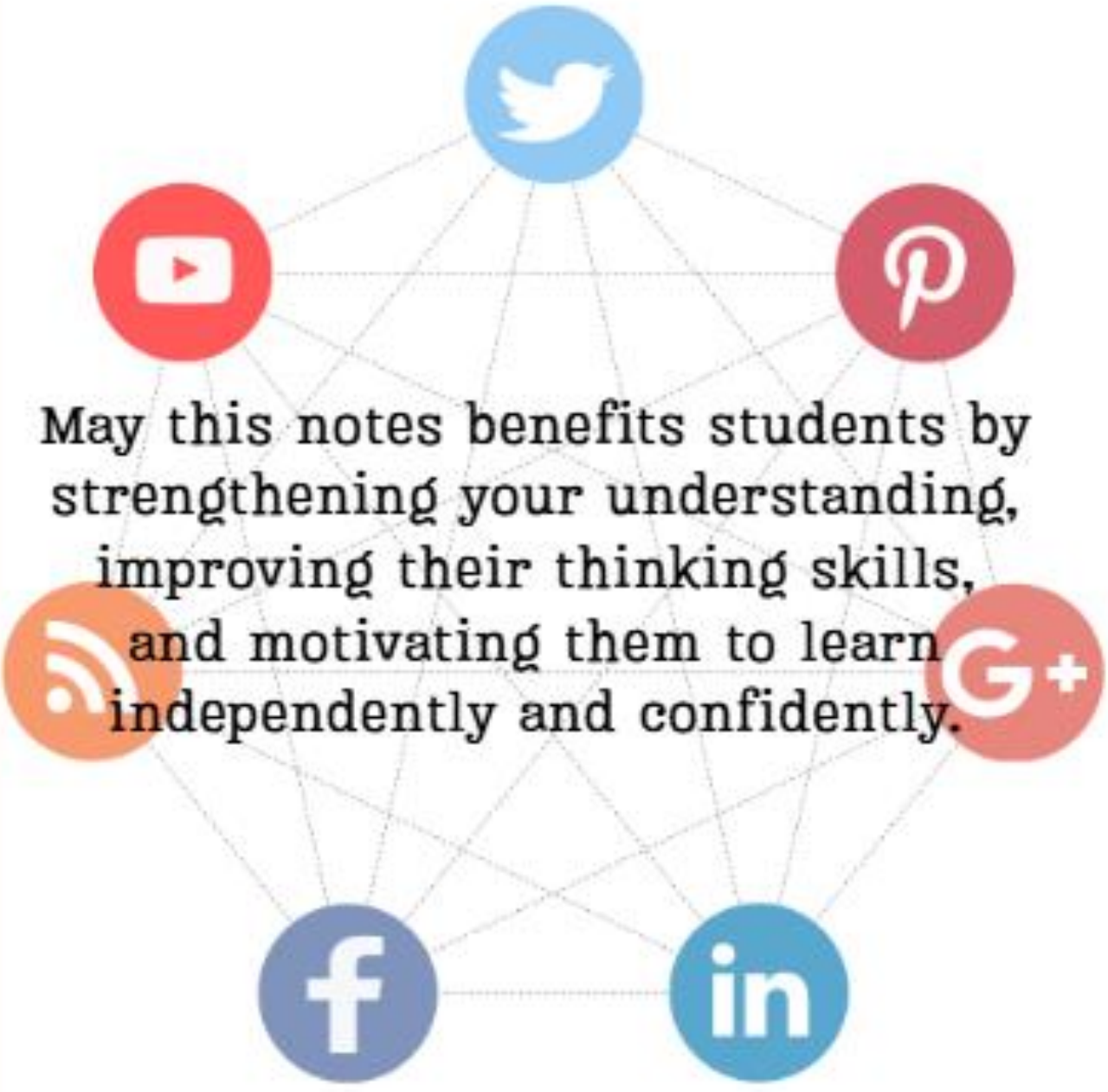
A. "Just be careful, okay?"
B. "Watch out!"
C. "Ensure the power is off to avoid electric shock."
D. "I hope nothing goes wrong."

7. What makes a technical instruction ineffective?

A. Using short and direct commands
B. Giving steps in logical order
C. Including unnecessary jargon and vague words
D. Using diagrams or labels

8. When giving oral instructions in a noisy workshop, you should...

A. Speak softly to avoid disturbing others
B. Use vague language to save time
C. Use gestures and repeat key steps clearly
D. Read instructions from a manual silently



May this notes benefits students by strengthening your understanding, improving their thinking skills, and motivating them to learn independently and confidently.