

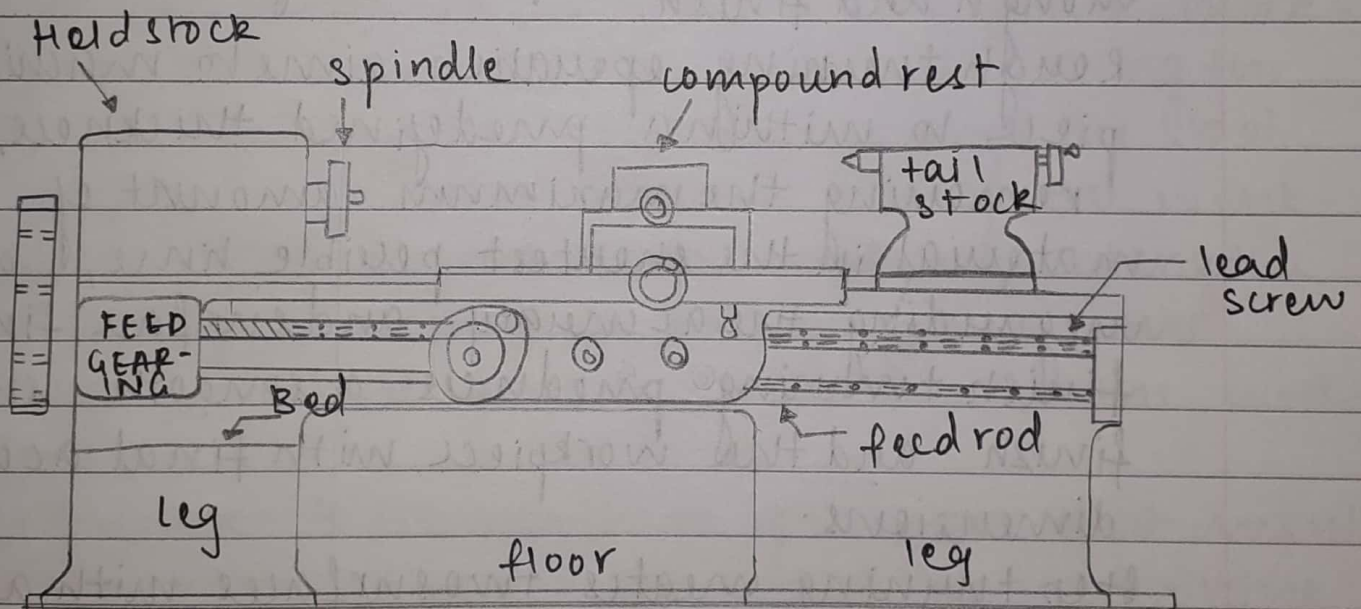
Machine Workshop - understand the use of lathe machine for shaping objects by removal of metal. (CO₂)

Hiral Patel (16010421071)

FY IT G3.

- 1) Draw the neat sketch of lathe machine and name its parts.

Answer:



2) Give the brief information of lathe operations.
[Any five].

Answer: • Turning - It is the most common lathe machine operation. During the turning process, a cutting tool removes material from the outer diameter of a rotating workpiece. The main objective of turning is to reduce the workpiece diameter to the desired dimensions. There are two types of turning operations, rough and finish.

Rough turning operation aims to machine a piece to within a predefined thickness, by removing the maximum amount of material in the shortest possible time, disregarding the accuracy and surface finish. Finish turning produces a smooth surface finish and the workpiece with final accurate dimensions.

Step turning creates two surfaces with an abrupt change in diameter between them. The final feature resembles a step.

Taper turning produces a ramp transition between the two surfaces with different diameters due to the angled motion between workpiece and cutting tool.

• Facing - During the machining, the length of the workpiece is slightly longer than the final part should be. Facing is an operation of machining the end of a workpiece that is perpendicular to the rotating axis. During the facing, the tool moves along the radius of the workpiece to produce the desired part.

length and a smooth face surface by removing a thin layer of material.

- Grooving - It is a turning operation that creates a narrow cut, a "groove" in the workpiece. The size of the cut depends on the width of a cutting tool. Multiple tool passes are necessary to machine wider grooves. There are two types of grooving operations, internal and face grooving. In internal grooving, a tool moves radially into the side of the workpiece and removes the material along the cutting direction. In face grooving, the tool moves radially into the side of the workpiece and removes the material along the cutting direction. In face grooving, the tool machine groove in the face of the workpiece.

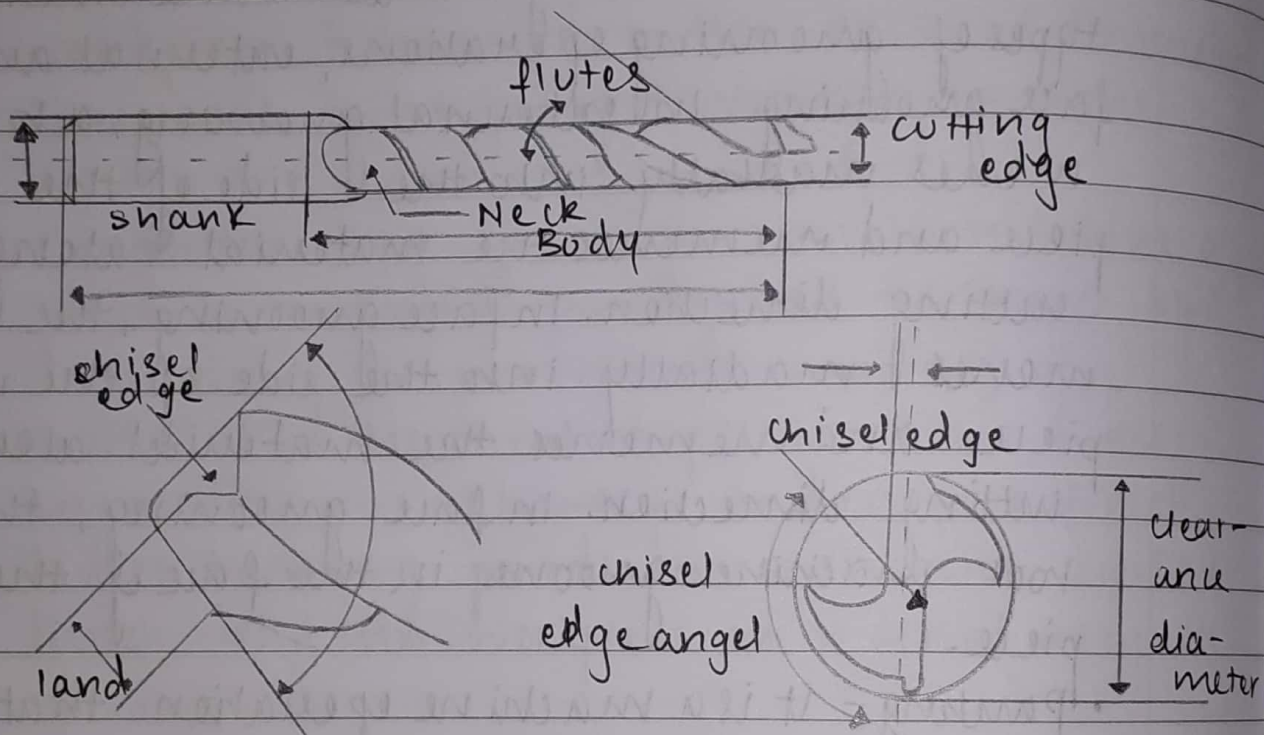
- Parting - It is a machine operation that results in a part cut-off at the end of the machining cycle. The process uses a tool with a specific shape to enter the workpiece perpendicular to the rotating axis and make a progressive cut while the workpiece rotates. After the edge of the cutting tool reaches the centre of the workpiece, the workpiece drops off. A part catcher is often used to catch the removed part.

- Drilling - The operation removes the material from the inside of a workpiece. The result of drilling is a hole with a diameter equal to the size of the utilized drill bit. Drill bits are usually positioned either on a

tailstock on a lathe tool holder.

- 3) Draw a neat sketch of twist drill and show its parts.

Answer:



- 4) list the machines available in our college workshop.

Answer:

- lathe machine
- turning machine
- drill machine
- shaping machine
- milling machine.

5) write down safety precautions while working in machine shop.

Answer: • Safety glasses with side shields must be worn at all times.

- Do not wear loose clothing, loose neckwear or exposed jewelry while operating machinery.
- Do not work alone.
- Pull back and secure long hair.
- Do not wear fabric shoes, sandals, open-toed shoes and high heeled shoes.
- A machinist's apron tied in a quick release manner should be worn ideally.
- Always keep hands and other body parts a safe distance away from moving machine parts, work pieces and cutters.
- Use hand tools for their designed purpose only.
- Report defective equipment, machinery or hand tools to the lab manager.
- Do not try to stop the machine with your body.
- Check tools and machines before use to assure they are safe to use.
- Always see that the work and cutting tools on any machine are securely clamped before starting up the work.
- Always use correct speeds and feeds.
- A broken tool is hazardous.