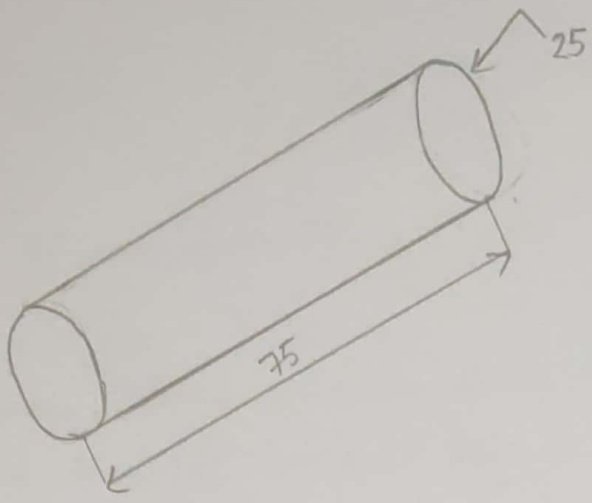
EXP: 12

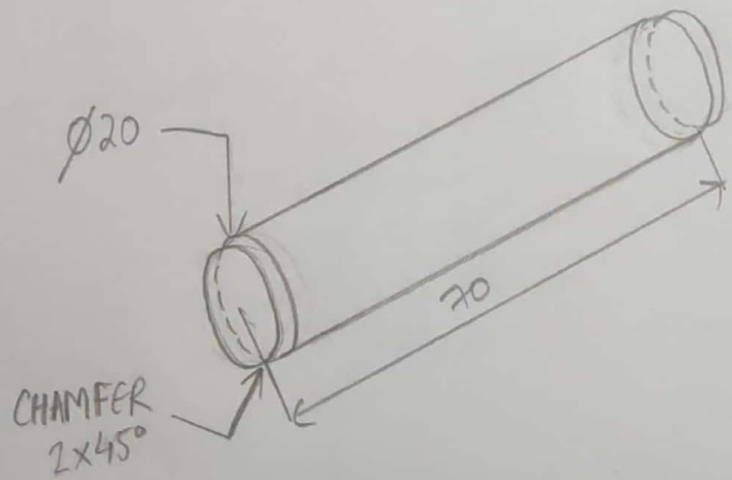
DATE: 10.12.21

TURNING, FACING AND CHAMFERING

(1) Raw Material



(2) Finished work piece



ALL DIMENSIONS ARE IN MM.

★ AIM:

→ To make the turning, facing and chamfering on the given metal work piece to get the required.

★ APPLICATION:

→ Mechanical industries

★ MATERIAL SUPPLIES:

→ Mild steel rod of 25 mm diameter x 75 mm length.

★ TOOLS REQUIRED:

(1) Steel Rule (2) Vernier Caliper (3) Center lathe M/C (4) Chuck key (5) Single point cutting tool (6) Tool post key (7) Spanner (8) Cleaning Brush.

★ SEQUENCE OF OPERATIONS:

(1) Checking (2) Work piece setting (3) Tool setting (4) Facing (5) Turning (6) Chamfering.

★ WORKING STEPS:

→ The given work piece is checked for its given dimensions.

→ The work is hold in the three jaw chuck. Chuck key is used to tighten the jobs rigidly ensuring centering of the work piece.

→ The single point cutting tool is fixed in the tool post of the lathe machine using Tool post key and spanners. Sometimes the packing material like hacksaw blade pieces, thick sheet paper materials can be used to set the tool approximately pointing towards the center of the job.

→ Facing operation is done to obtain the required length of the job.

→ Turning operation is done to obtain the required diameter of the job.

→ Chamfering is done to remove sharp edges and corners of the work piece by keeping the tool at an angle of 45° to the lathe axis.

→ Finally the work piece dimensions are checked to confirm to the specification given in the drawing.

★ PRE AND POST LAB QUESTIONS:

Q1. Define Lathe.

Ans= A lathe is a machining tool that is used primarily for shaping metal or wood. It works by rotating the workpiece around a stationary cutting tool. The main use is to remove unwanted parts of the material, leaving behind a nicely shaped workpiece.

Q2. List out the types of lathe.

Ans= (1) Centre Lath or Engine Lathe Machine.
(2) Speed Lathe Machine.
(3) Capstan and turret Lathe Machine.
(4) Toolroom Lathe Machine
(5) Bench Lathe Machine
(6) Automatic Lathe Machine
(7) Special Lathe Machine.
(8) CNC Lathe Machine.

Q3. Mention the main parts of lathe.

Ans= Main Parts of Lathe Machine are: Headstock, Tailstock, Bed, Carraige, Lead Screw, Feed Rod, Chip Pan, Hand Wheel, Legs, etc.

Q4. Mention different operations performed in lathe.

Ans= (1) Facing operation
(2) Turning Operation
(3) Chamfering Operation
(4) Knurling Operation
(5) Thread Cutting Operation.
(6) Filling Operation
(7) Polishing operation
(8) Grooving Operation.

(9) Spinning Operation
(10) Spring Operation

Q5. List out the lathe cutting tools.

Ans= (1) Turning Tool
(2) Chamfering Tool
(3) Thread cutting Tool
(4) Internal Thread Cutting Tool
(5) Facing Tool
(6) Grooving Tool
(7) Forming Tool
(8) Boring Tool
(9) Parting-off Tool
(10) Counter Boring Tool.
(11) Undercutting Tool.

Q6. What are the different types of lathe chuck?

Ans= (1) Four jaws independent chuck.
(2) Three chuck universal chuck.
(3) Combination type chuck.
(4) Magnetic type chuck.
(5) Collet chuck.
(6) Air or Hydraulic operated chuck.
(7) Drill chuck.

Q7. Mention the tool materials used in lathe.

Ans: (1) Carbon Steel
(2) High-Speed steel
(3) Cast alloys
(4) Cemented tungsten carbide
(5) Oxides
(6) Cutting fluids.

Q8. Mention the tool post angle for facing, turning and chamfering process?

Ans= 15-20 Degrees.

Q9. What is the facing operation?

Ans= Facing is a turning operation in which the workpiece is machined to its centre. It involves moving the cutting tool perpendicular to the work piece's axis of rotation. Facing is commonly used in CNC Machine and boring, refers to the process of removing material from the end and shoulder of a workpiece, uses a facing tool to produce a flat, smooth surface perpendicular to the rotational axis of the workpiece. If the stock has a hole in the centre, a half-centre should be utilized to stabilize and support the workpiece.

Q10. Define turning operation.

Ans= Turning is the removal of metal from the other diameter of a rotating cylindrical workpiece. Turning is used to reduce the diameter of the work piece, usually to a specified dimension and to produce a smooth finish on the metal. Often workpiece will be turned so that adjacent sections have different diameters.

★ RESULT:

→ Hence the required shape and size are obtained using Turning, facing and Chamfering operations on the given work piece.