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Roll No: B190529CS Batch: JI

Sl. No	Date	Exercise	Model Marks (10)	Viva Marks (10)	Recor d Marks (10)	Verified by
1						
2						
3						
4						
5						
6						
Total						
Scaled Marks		60	10	5	10	15
Certified by Course Faculty:						

FOUNDRY

Name of the Exercise:

Date: 7/09/19 Exercise No: 1 Aim: To make the mould

cavity of the given pattern.

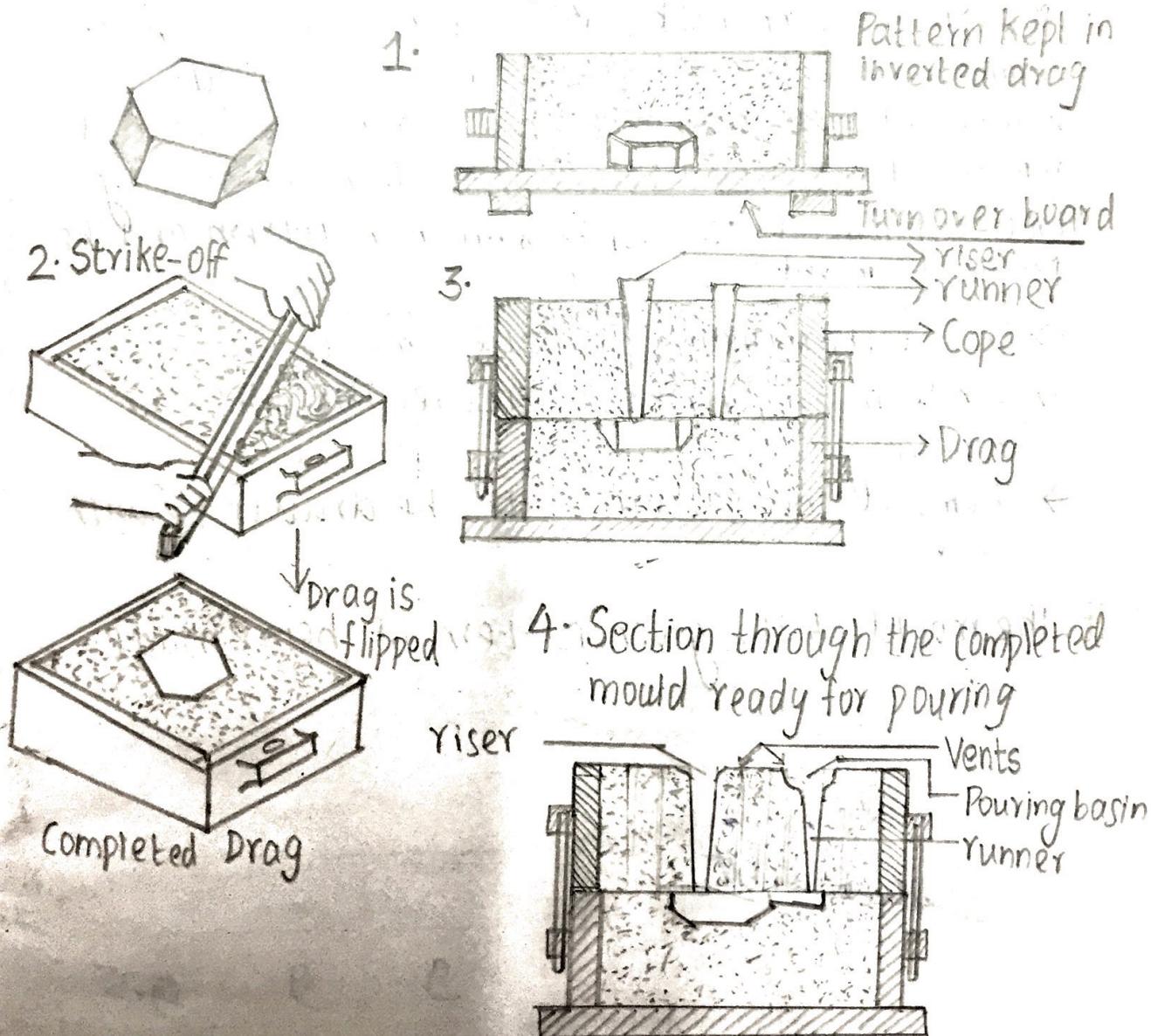
Tools Required: Fillet Tool, vent wire, cleaner, round rammer

Small rammer, long heart trowel, runner, riser, leveller, bellow, draw spike

Material/s Required: Moulding sand, Parting sand

Machinery/ Equipment used: Drag, Cope, given pattern

Figure & Table



The pattern is placed in the drag on the table, the moulding sand is made fine and poured into the drag. The fillet tool is used to ensure that the crevices are filled and sand is compact followed by the small and round rammers to press the sand into the drag. The leveller and long heart trowel is used to level the sand. The bellow is used to remove the excess sand and the drag is firmed and parting sand is sprinkled. The cope is mounted on the drag. The riser is placed on the pattern and runner is kept at a distance from pattern. The rammers are used to make sand compact and levelled. Vent wire is used to poke holes for air flow. The runner and riser is removed after making a funnel with a cleaner. A moulding track is then made. A drawspike is hit on the pattern and the pattern is removed.

Precautions & Inferences: sand

- Ensure the moulding is made compact.
- While making vent holes, ensures the holes are not very deep.
- Remove the pattern with the drawspike with care.

Result: The mould of the given pattern is hence made.

Verified by:

Shashank

Model	Record	Viva
9	9	9.5

Name of the Exercise: SMITHY

Date: 14/08/19 Exercise No: 2 Aim: To make a flat rectangular

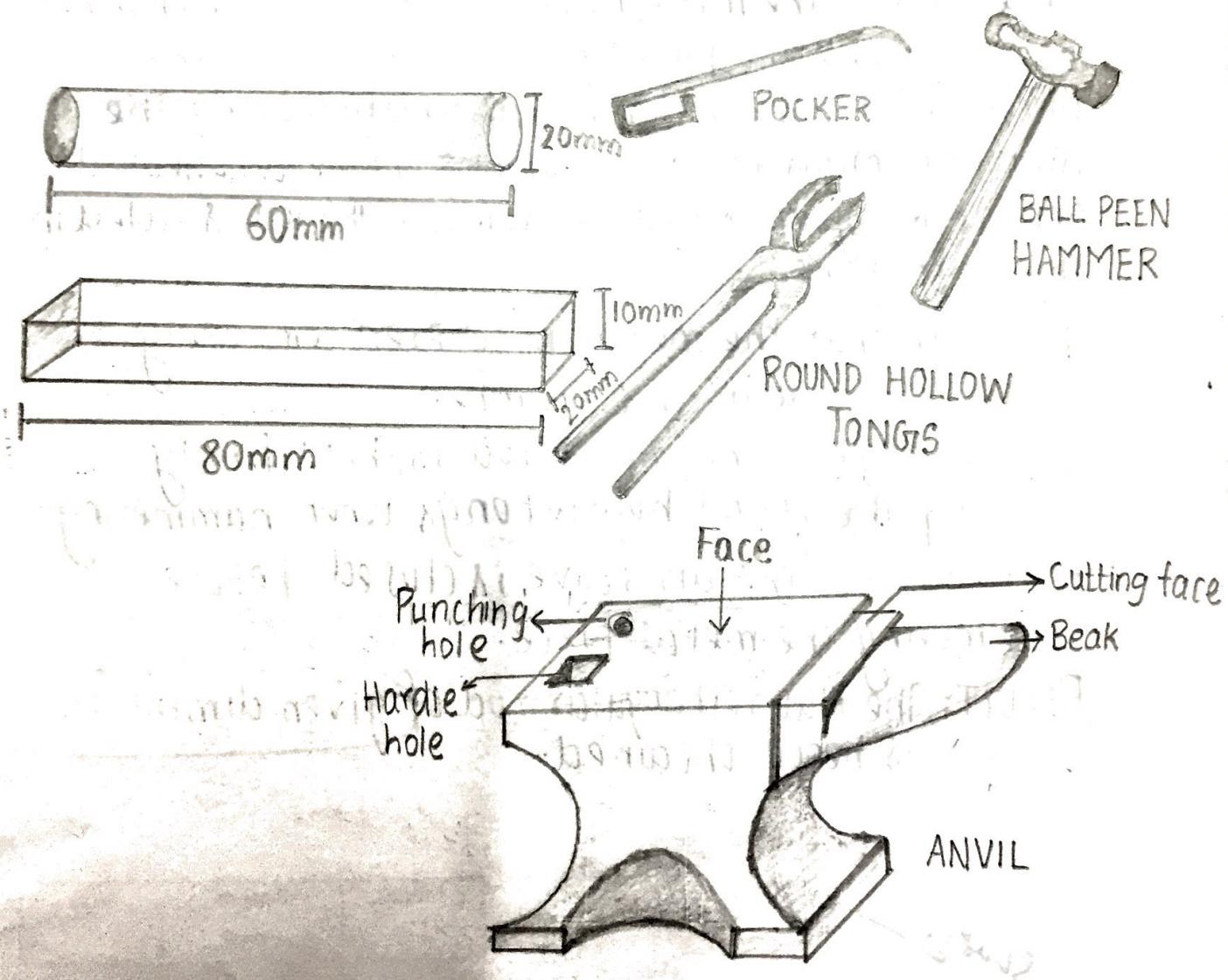
rod of certain dimension from given metal round rod.

Tools Required: Pockey, Ball peen hammer, Round hollow tongs, brass measuring scale

Material/s Required: Round rod, charcoal

Machinery/ Equipment used: Open earth furnace, Anvil

Figure &/ Table



Procedure: The charcoal is placed in the fire chamber and the round rod is placed on the charcoal and covered with more charcoal using the poker. The air valve is opened and air enters the fire chamber. The fuel (charcoal) is supported by air from air valve. Wait till the rod becomes red hot (725°C - Recrystallization temp.). The rod is then removed and placed on the anvil using the round hollow tong. The ball peen hammer is used to hammer the metal rod into desired dimension ($80 \times 20 \times 10$ mm). Once cooled, the metal is placed in the fire chamber, heated up and the process is repeated till desired dimensions are obtained, which is verified using the standard brass ruler. For finishing, the metal is heated and hit gently until surface is smooth. The rod is cooled in the water tank.

Precautions & Inferences:

1. Ensure that the metal is covered completely with charcoal in fire chamber.
2. Ensure that the metal rod is held firmly using the round hollow tong when hammering.
3. Ensure that the air valve is closed before removing the metal piece.

RESULT: The flat rectangular rod of given dimension is hence obtained.

Verified by:

Shashikumar

Model	Record	Viva
7.5	8.5	9.5

SHEET METAL

Name of the Exercise.....

Date: 21/8/19

Exercise No: 3 Aim: To prepare a rectangular

tray of dimension (120x100x30) mm from given sheet metal.

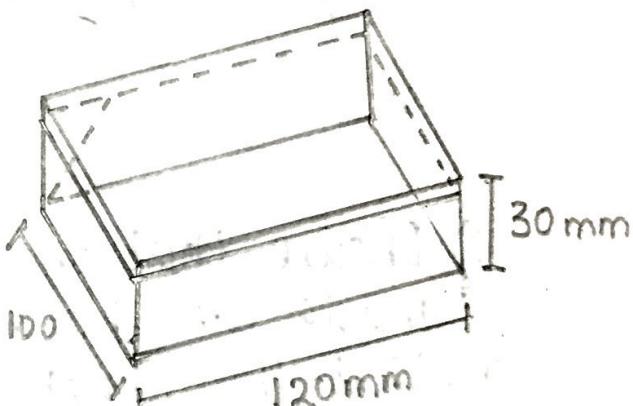
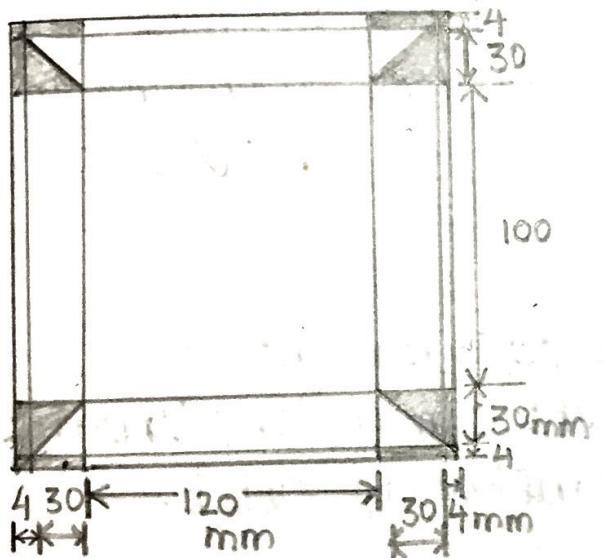
Tools Required: Mallet, Scriber, Trysquare, Straight snip, square headed stake, Brass ruler

Material/s Required: Given 26.4 gauge metal sheet.

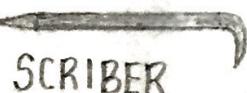
Machinery/ Equipment used:

Anvild, Edge folding machine

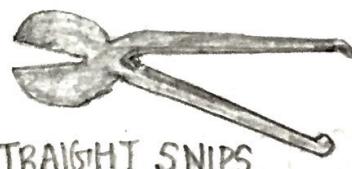
Figure &/ Table



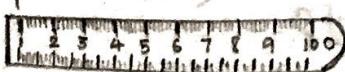
MALLET



SCRIBER



STRAIGHT SNIPS



BRASS SCALE



SQUARE
HEADED
STAKE

~~Dimension~~ 2

Procedure: Place the metal sheet. Mark the appropriate measurements lined using scriber and scale. Cut off extra metal using straight snip. Cut the shaded part as shown in development figure. Fold the single hem along 120mm sides totally and single hem along 100mm side should be folded upto 90° . Fold the (30mm wide) side on the square head stake and mallet it. Now fold extra triangular part under 90° folded single hem. Mallet all single hem till it becomes rectangular. Finishing is done using mallet.

Precautions & Inferences:

- 1) Ensure that the measurement is made to the right dimensions ($120 \times 100 \times 30$) mm and that the sheet metal is cut to precision.
- 2) Ensure all safety ~~measurements~~ ^{measure} be are taken before the start of the exercise.

RESULT: The rectangular tray of dimensions ($120 \times 100 \times 30$ mm) is hence made.

Verified by:

Model	Record	Viva
8	9	9

STEP TURNING OPERATION

Name of the Exercise:

Date: 28/8/19

Exercise No: 4

Aim: To perform a step turning

operation on the given cylindrical work piece.

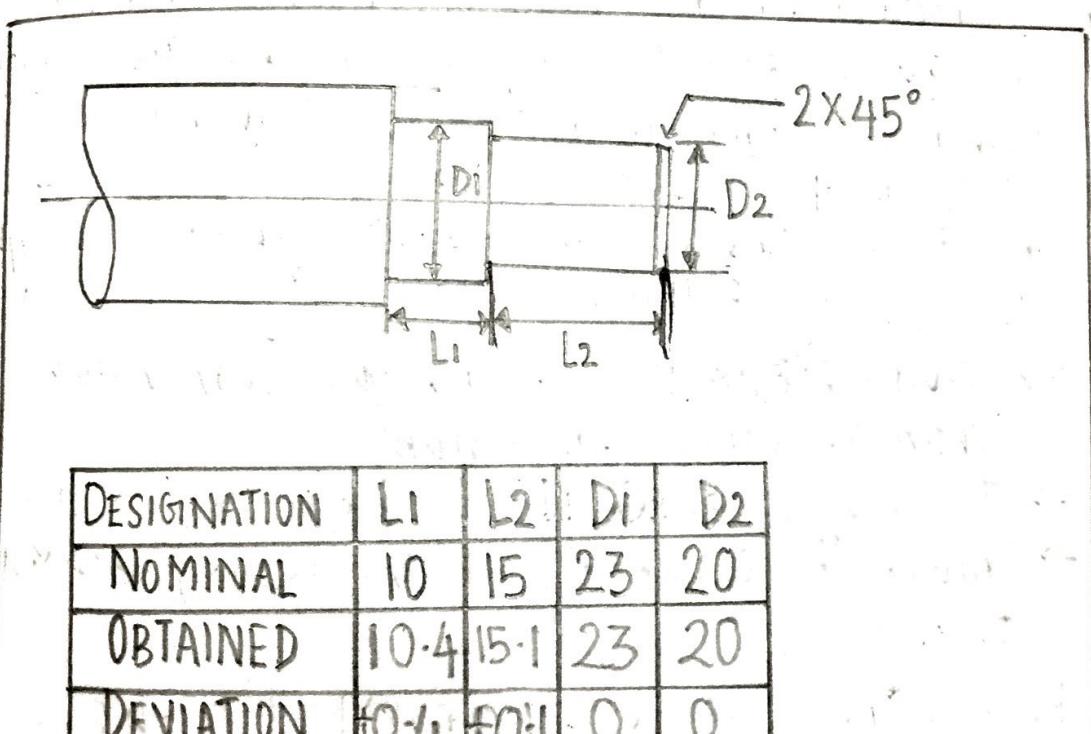
Tools Required: High speed steel cutting tool [HSS],

Vernier caliper, Chuck key, tool holder with key, Surface gauge

Material/s Required: Mild steel [MS] round rod of diameter 25 mm

Machinery/ Equipment used: Lathe with standard accessories, work piece

Figure & Table



ALL DIMENSIONS ARE IN mm

MATERIAL: MS ROD $\phi 25$, L: 50

TOLERANCE:

DIA: ± 0.04

LENGTH: ± 0.1

Procedure: The lathe machine consists of the following main parts - head stock, tail stock, tool feed, screw feed, carriage, tool post chuck. Carriage has compound rest, slide rail, the apron whose movement is controlled by 2 wheels off to the slide. Four stages :-

- * Centering: In which the work piece is positioned at exact centre of the chuck. A surface gauge is used to ensure proper centering. 30mm of work piece ^{is outside} the chuck.
- * Facing: In which the end of the work piece is leveled out evenly using the single edged cutting tool.
- * Turning: A 25mm diameter work piece is reduced to 23mm & 20mm respectively.
- * Chamfering: The circumference edge is cut at 45° angle to remove sharp edges.

Precuations & Inferences:

- Work piece should be of higher dimension than required dimension.
- The measurement must be done correctly.
- Ensure the centering of the work piece is perfect.

RESULT: The work piece is converted to the given model as per dimension shown in figure.

Verified by:

Model	Record	Viva
85	8.5	8.5

Name of the Exercise: CARPENTRY

Date: 4/9/19 Exercise No: 5 Aim: To make a cross halving

joint with 2 pieces of dimensions $45 \times 135 \times 36 \text{ mm}^3$

Tools Required: TRY SQUARE, STEEL RULE, MALLET, G CLAMP,

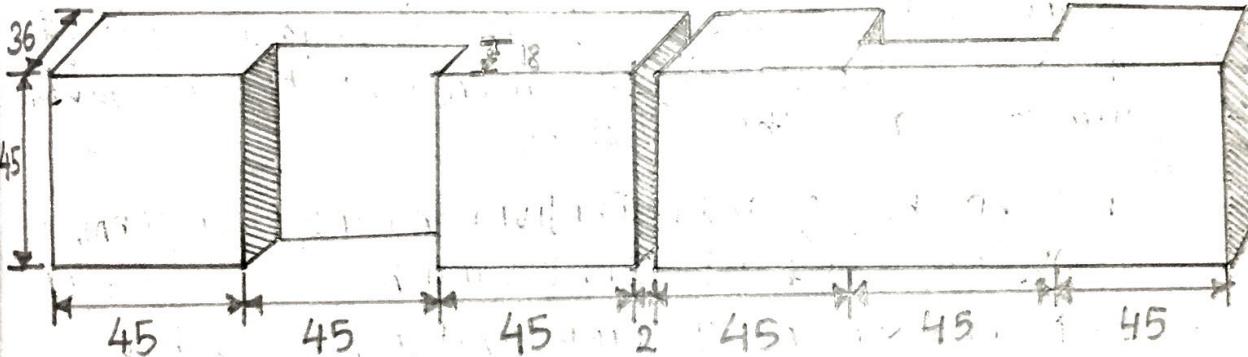
BENCH VISE

Material/s Required: MAMAGUNY WOOD BLOCK OF DIMENSIONS greater than $36 \times 270 \text{ mm}$

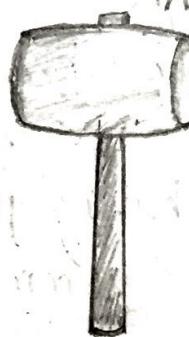
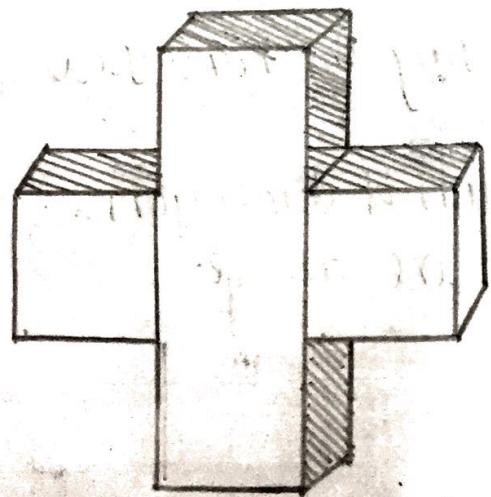
Machinery/ Equipment used: IRON PLANE, FIRMER CHISEL, HAND JAW

Figure & Table

CROSS HALVING JOINT



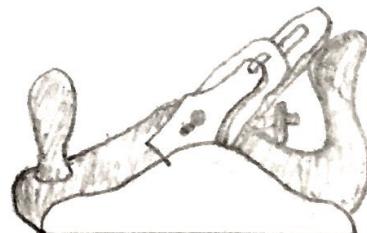
ALL DIMENSIONS ARE IN MM.



MALLET



HAND SAW



IRON PLATE

Name of the

Date: 18/9

join
well

Tools Requi

Electr

Material/s R

Machinery/

Procedure:

Planing: First afix the block with a bench vise and we an iron plate to smoothen one side. An adjacent side is planed and checked for squareness with a try square.

Marking: The block is drawn on with a pen and steel rule and the try square and the dimensions given in fig. is marked. Note that 2mm is left where the two halves of the joint is to be separated to account for the error due to width of the blade.

Sawing: The block is affixed on a bench vice and a hand-saw is used to roughly remove extra wood.

Chiseling: The block is affixed using the G-clamp and a firmer chisel and mallet is used to chip away wood to attain the accurate dimensions. A hand-saw is used to separate the 2 halves.

Precautions & Inferences:

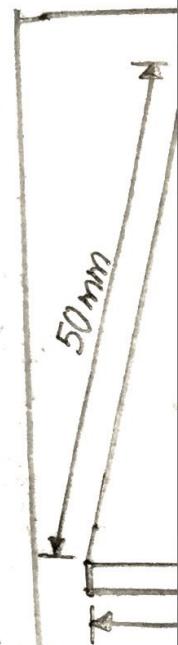
1. Keep the required dimensions in mind when planning so that you don't plane too much.
2. Make sure the G-clamp and bench vice are sufficiently tight.
3. Take caution when using the hand-saw and avoid injuries.

RESULT: Cross having joints of dimensions $45 \times 135 \times 36 \text{ mm}^3$ are made.

Verified by:

18/9/19

Model	Record	Viva
7	8	8



FITTING AND WELDING

Name of the Exercise:

Date: 18/9/19

Exercise No: 6

Aim: To make a simple V butt

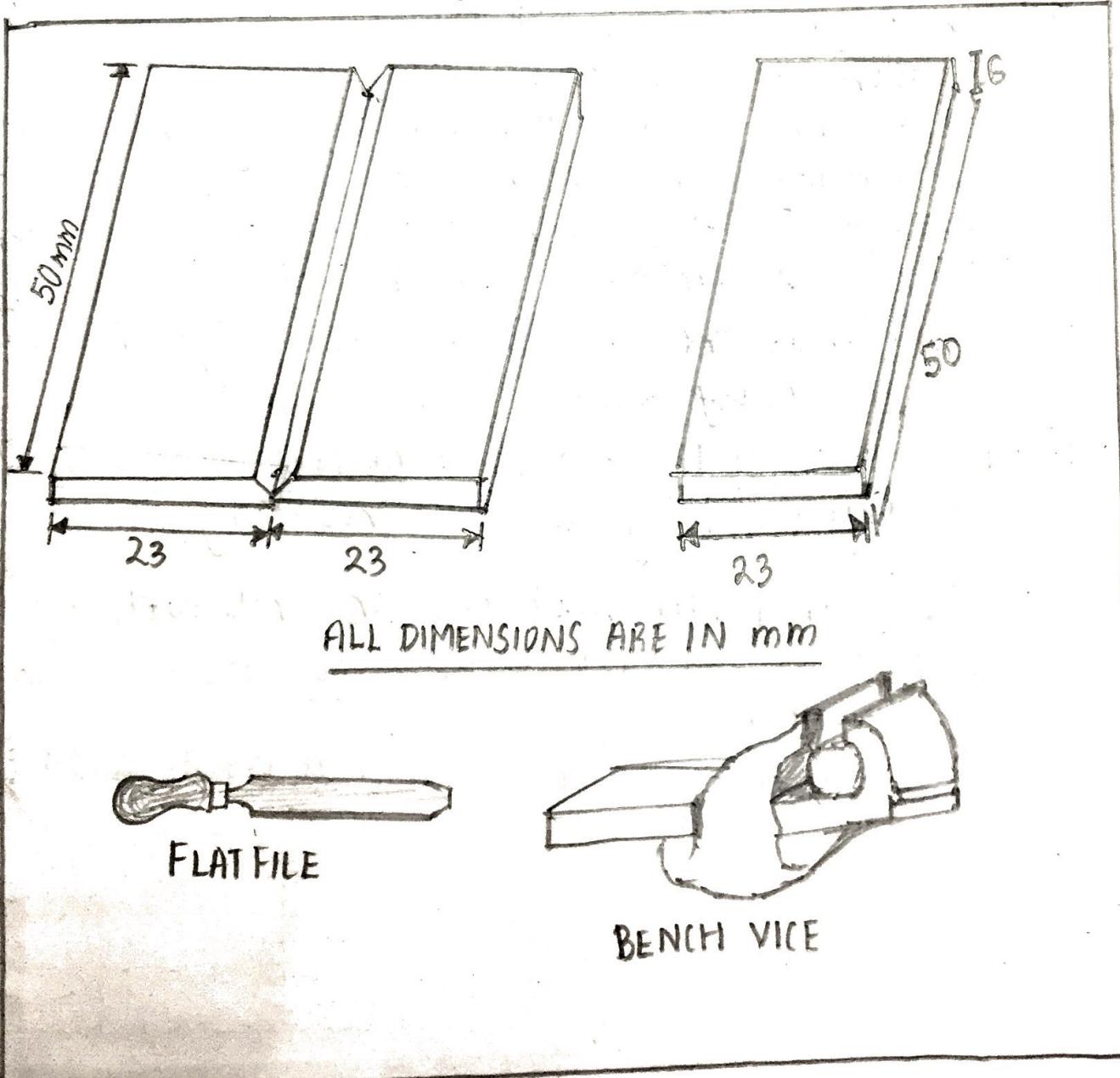
joint on the work piece by performing fitting and welding operation.

Tools Required: Flat file, Try square, Bench vice, face shield
Electrode or mild steel electrode, Tonga, Chipping Hammer.

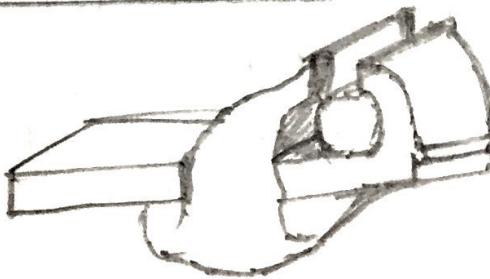
Material/s Required: Two mild steel workpiece of dimensions 50mm X 23mm

Machinery/ Equipment used: Arc welding machine, Bench vice.

Figure & Table



FLAT FILE



BENCH VICE

Procedure: The given mild steel workpiece is placed in the bench vice. Three adjacent sides of the workpiece is filed and smoothened using a flat file and the perpendicularity of the surfaces is checked each time a face of the workpiece is filed. Thus the 3 faces are perpendicular. The fourth side is filed at an approximate angle of 45° .

The above procedure is repeated with the second mild steel work piece to obtain a dimension of $50\text{mm} \times 23\text{mm} \times 6\text{mm}$.

Next, the two pieces are welded together with the arc welding machine with ~~a~~ ^{50A} current and low voltage and a face shield ^{is worn} ~~is worn~~ ^{protect} the eyes. The slag is removed with the chipping hammer and while the workpiece is held by tongs and is finally cooled with water.

PRECAUTIONS & INFERENCES: → The perpendicularity is checked using try square, without any parallax error.

- The face shield should be worn while welding.
- The hot workpiece is held carefully with the tongs.

RESULT: The mild steel plates with a V-butt joint
Verified by: is made.

Model	Record	Viva