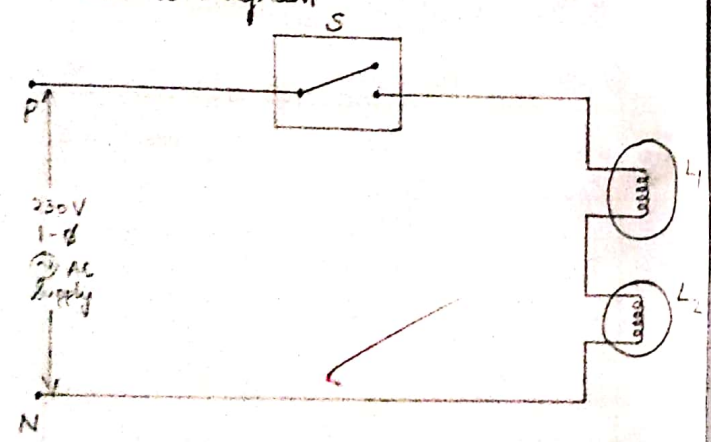
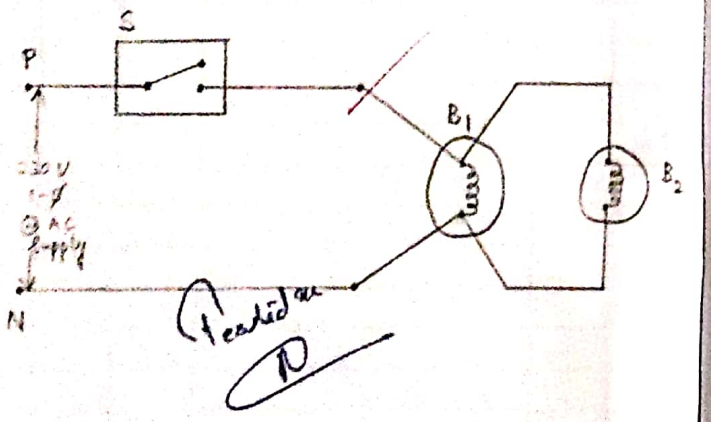
Circuit Diagrams :-

Main circuit Diagram





29/1/20

1. PARALLEL AND SERIES CIRCUITS

Aim :-

To make the connection for Two lamps connected in parallel and series controlled by one-way switch and test the same.

Material Required :-

S.No	Material	Specification	Quantity
1.	Wire	1/18, copper, red	0.6 m
2.	Wire	1/18, copper, green	0.5 m
3.	Round blocks	ϕ10 cm, Nylon	3
4.	Switches	1 Way, Box type 6A, 250 V	1
5.	Holders	6A Slant 250 V	1
6.	Socket	2P Box type 6A	1
7.	Screws	1 1/2 scress brass	6
8.	Link clips	1 1/4 Aluminium	6
9.	Nails	1/2"	6

Tool Required :-

S.No	Tool	Specification	Quantity
1.	Hammer	Ball Pean	1
2.	Pocker	8" Taperia Make	1
3.	Screw Driver	8" Taperia Make	1
4.	Connector	3"	1
5.	Wire Stripper		1

Procedure :-

1. Link clips are fixed to the wooden batten using nails & hammer.
2. The wire is run on the batten & clips are folded.
3. Nylon round blocks are fixed to the batten after inserting the wire through.
4. Lamp holder, switch & sockets are fixed at proper locations and connections are given as per the wiring diagram.
5. The circuit is checked before the supply is given.

Precautions :-

1. Supply should be given while making connections.
2. All the connections must be made right.
3. The live points not touch the metal parts in the circuit.
4. Care should be taken while driving nails.

Result :-

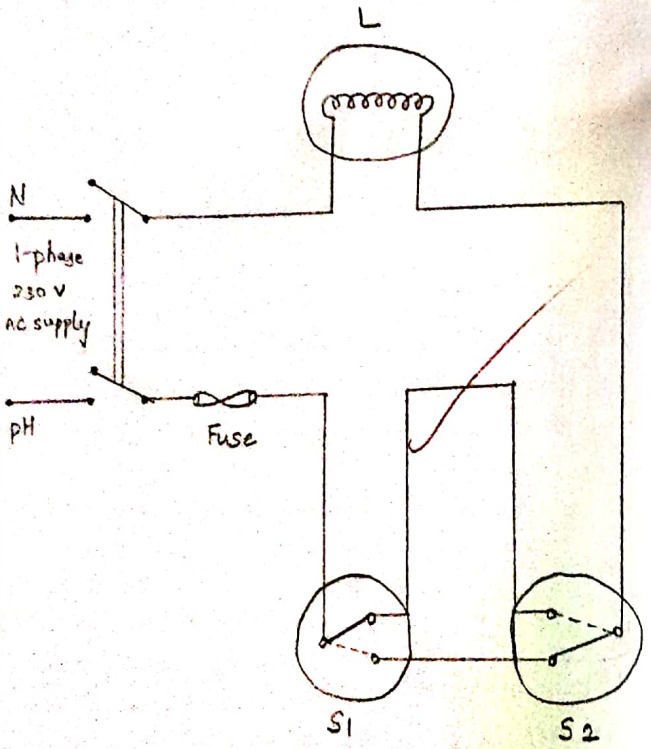
Hence made the connection for Two lamps in parallel/series and the bulbs are glowing as per procedure.

9

29/11/20

Circuit Diagram :-

STAIR CASE WIRING



5/2/20 2. TWO WAY SWITCHES.

Aim :-

To control one lamp by two 2-way switches.

Experiment Kit :-

1. Kit kat fuse : 1 Nos. 5 Amps.
2. Single pole switch : 2 Nos., 5 Amps.
3. Lamp holders : 2 Nos., 5 Amps.
4. Lamps : 2 Nos.
5. Battens, Nails, clips, CTS wire, Fuse wire.
6. Round wooden block : 04 Nos.
7. Square wooden block : 01 Nos.

Procedure :-

1. Fix the battens at suitable distance as per the circuit diagram.
2. Cut the wire in suitable sizes. Fix the clips with nails on the battens & put the wire as per circuit diagram. The wires should not cross each other on the batten.
3. Fix the wooden blocks as per correct position & complete the wiring as per circuit diagram.
4. Put the fuse wire in Kitkat fuse.
5. Test the complete wiring as per testing procedure.

Testing :-

1. Connect 230V AC supply to the circuit.
2. ON & OFF switch S1 & check that either lamp L1 glows or not.
3. Check lamp L1 by S2.
4. Switch on the lamp by S1 & switch off that by S2.

(If any given points in testing are not working, it means that somewhere connections are wrong).

Use :-

Such connections are used in house for stair-case, for double application of fan, night lamp etc.

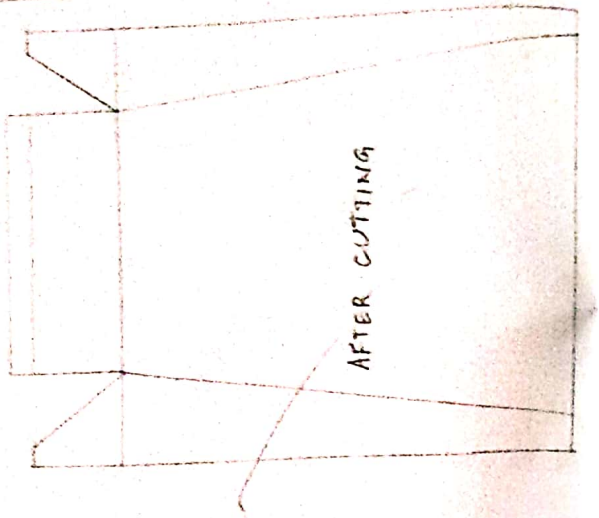
Precautions :-

1. Supply should not be given while making connections.
2. All the connections must be made right.
3. The live points not touch the metal parts in the circuit.
4. Care should be taken while driving nails.

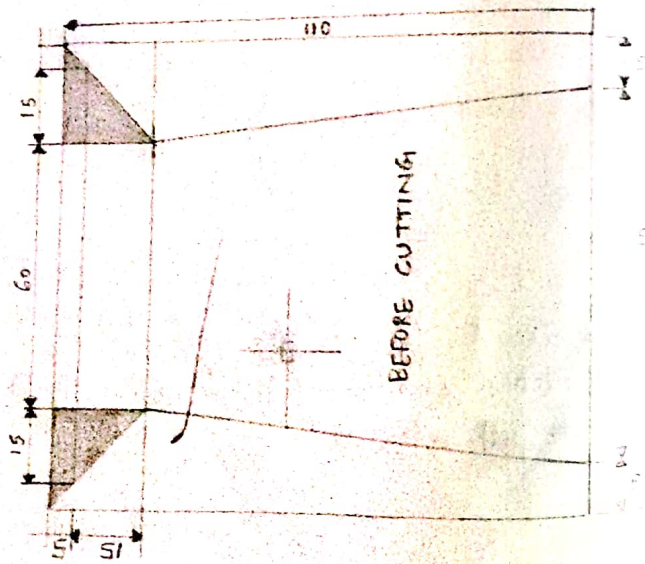
Result :-

A circuit, for one lamp controlled by two switches is made and tested. The bulb is glowing with full intensity.

03/2/2019



ALL DIMENSIONS ARE IN MM.



15/3/23

4. TAPERED TRAY

Aim :-

To make a tray using the given G.I sheet.

Tools Required :-

1. Steel rule
2. Scriber
3. Straight strip
4. Bench vice
5. Stake
6. Nylon mallet
7. Wooden mallet
8. Cutting pier

Material Required :-

Galvanized Iron (G.I.) sheet 90 x 110 mm size.

Sequence of operations :-

1. Cleaning
2. Surface levelling.
3. Marking
4. Cutting
5. Folding

Procedure :-

1. Clean the given sheet with cotton waste.
2. The size of the given sheet is checked with the steel rule.
3. Flatten the surface of the given sheet with wooden mallet.
4. Check the G.I sheet for dimensions and remove extra, if any.
5. Mark all the measuring lines on the given sheet with scriber.
6. Cut the given sheet with straight snips as required.
7. Fold the given sheet by using stakes and ball peen hammer to the required shape.

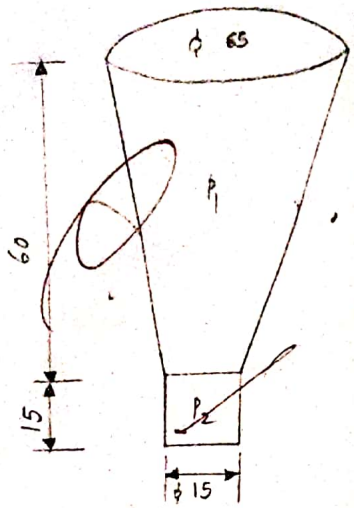
Safety Precautions :-

1. For making purpose use scriber only. Do not use pencil or pen.
2. Sufficient care is to be taken while cutting and folding of G.I sheet.
3. Remove the waste pieces immediately from the work place.

Result :-

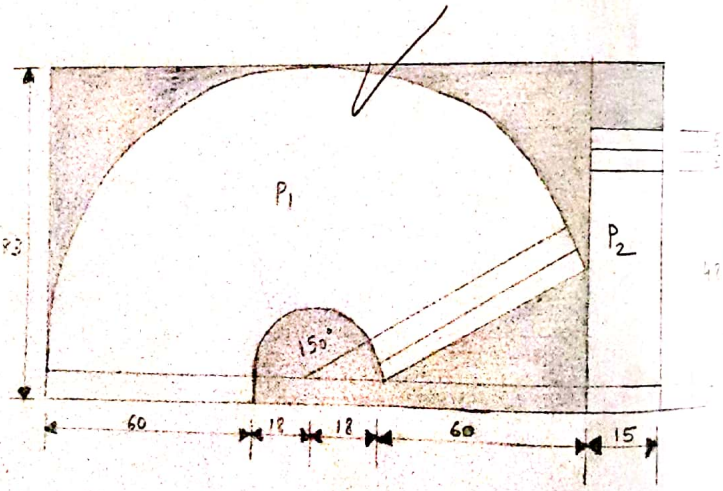
Tray is prepared as per the required dimensions.

Sketch of the Product:



All dimensions are in mm.

Development of Product:-



All dimensions are in mm.

12/2/2020

3. FUNNEL

Aim:-

To prepare a funnel with dimensions

Larger diameter D = 65 mm

Smaller diameter d = 15 mm

~~Slant height, S = 60 mm~~

Height h = 15 mm

Tools Required:-

Steel rule, scriber, try square, protractor, divider, nylon mallet, straight snip and curved snip.

Work Material Required:-

G.I Sheet of 171 mm × 83 mm.

Sequence of Operations:-

1. Marking
2. Cutting
3. Edge folding
4. Bending
5. Edge interlocking
6. Soldering

Procedure:-

1. Marking is done on the given G.I sheet using try square and scriber as per the development.
2. The hatched portions are removed and parts (1)

Calculations :-

Area of sheet = $171 \times 83 = 14193\ mm^2$

Area of used material = $\frac{150}{360}\pi(78^2-18^2) + (5\times60) + (10\times60) + (15\times63)$

$= \frac{5\pi}{12}(6084-324) + 300 + 600 + 915$

$= 9381\ mm^2$.

Area of wastage = Area of sheet − Area used

$= 14193 - 19381$

$= 4812\ mm^2$.

Wastage factor = $\frac{\text{Area of wastage}}{\text{Area of sheet}} \times 100$

$= \frac{4812}{14193} \times 100$

$= 33.90\ \%$

and (2) are obtained by cutting with the help of curved snip and straight snip.

3. Edges of both the parts are folded appropriately.
4. Part (1) is bent to form frustum of a cone and part (2) is bended to form a cylindrical shape.
5. Folded edges of part (1) are brought together and are interlocked. Similarly folded edges of part (2) are brought together and are interlocked.
6. Part (1) and (2) are joined by soldering so that required funnel is obtained.

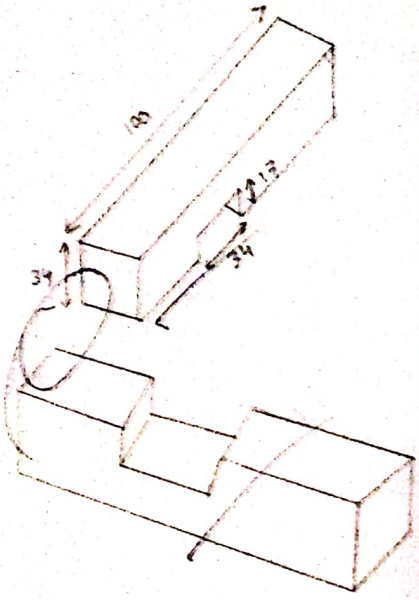
Precautions :-

1. Sharp edges are to be avoided.
2. Care should be taken while using mallet, snips etc.

% of waste factor is 33.90

Result :-

The required funnel is prepared with a % of waste factor of 33.90 %.



19/2/20

5. CROSS LAP JOINT

Aim :-

To make a cross lap joint.

Materials Required :-

Two wooden pieces of size

Tools and Equipment Used :-

1. Steel rule
2. Try square
3. Marking gauge
4. Handsaw
5. Firmer chisel
6. Wooden Mallet
7. Jack plane
8. Wood rasp file
9. Carpentry vice

Operations to be Carried Out :-

1. Planning
2. Marking
3. Sawing
4. Chiselling
5. Finishing
6. Assembling

Procedure :-

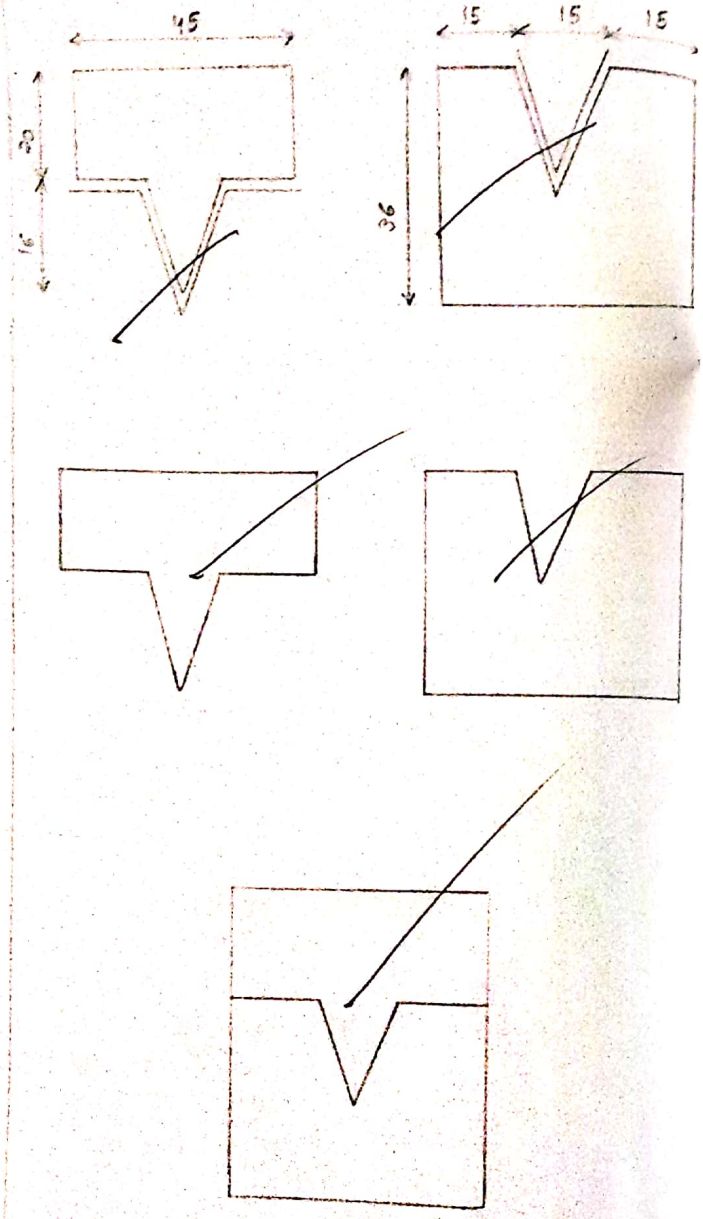
1. The wooden pieces are made into two halves and are checked for dimensions.
2. The two pieces after fixing in a vice are planed using jack plane. The sides are checked with perpendicularity with a try square.
3. Marking is done on both the pieces using marking gauge, scriber and try square.
4. The unwanted material is removed from the pieces using saw and firmer chisel.
5. The mating parts of the two pieces are finishing to form the required cross lap joint.
6. The prepared two pieces are assembled to get cross lap joint.

Precautions :-

1. Care should be taken while using chisel, saw etc.
2. Tools should always be well sharpened to prevent slip and hence injury.
3. While cutting with chisel, it should always be pushed away from the body.
4. When thumb is used as a guide, during sawing, raise it sufficiently high.
5. Loose clothing should be avoided.
6. Planning should be done along the grains only.

Result :-

The cross half lap joint is made successfully.



All dimensions are in mm.

26/2/20

6. V-FIT

Aim:-

To make a V- Fit.

Tools Required:-

Steel rule, scriber, dot punch, and hammer, Hacksaw frame with blade, try square, flat bastard file, triangular file

Work Material Required:-

Two M.S plates of 56 mm x 45 mm each.

Sequence of Operations:-

1. Edge preparation
2. Marking
3. Dot punching
4. Cutting
5. Filing
6. Finishing

Procedure:-

1. Two adjacent edges of each work piece are filed with bastard file. Straightness and perpendicularity are checked using try square.
2. $CaCO_3$ is applied to the surfaces of the two pieces. After drying, marking is done with reference to the prepared edges using try square and scriber.
3. Using dot punch, punching is done on the both

the pieces along the salient markings indicating material is to be removed.

4. Cutting is done, along the lines of cut, using hacksaw there by maximum possible unwanted material is removed in less time.
5. Excess material is removed by filing with a triangular file.
6. The contacting surfaces of the two pieces are still finished to get a 56 x 45 mm.

Precautions :-

1. Select Hack saw blade with appropriate pitch.
2. Hacksaw blade should be in hacksaw frame, with the teeth pointing forward as the saw cut in forward stroke only.
3. Apply force only in the forward cutting stroke.
4. Cut a small groove with a file in sharp corners where a saw cut is to be started.
5. Use file with a properly fitted tight handle.
6. Check whether the handle of the hammer is securely wedged or not.

Result :-

The required V-Fit is made satisfactorily.