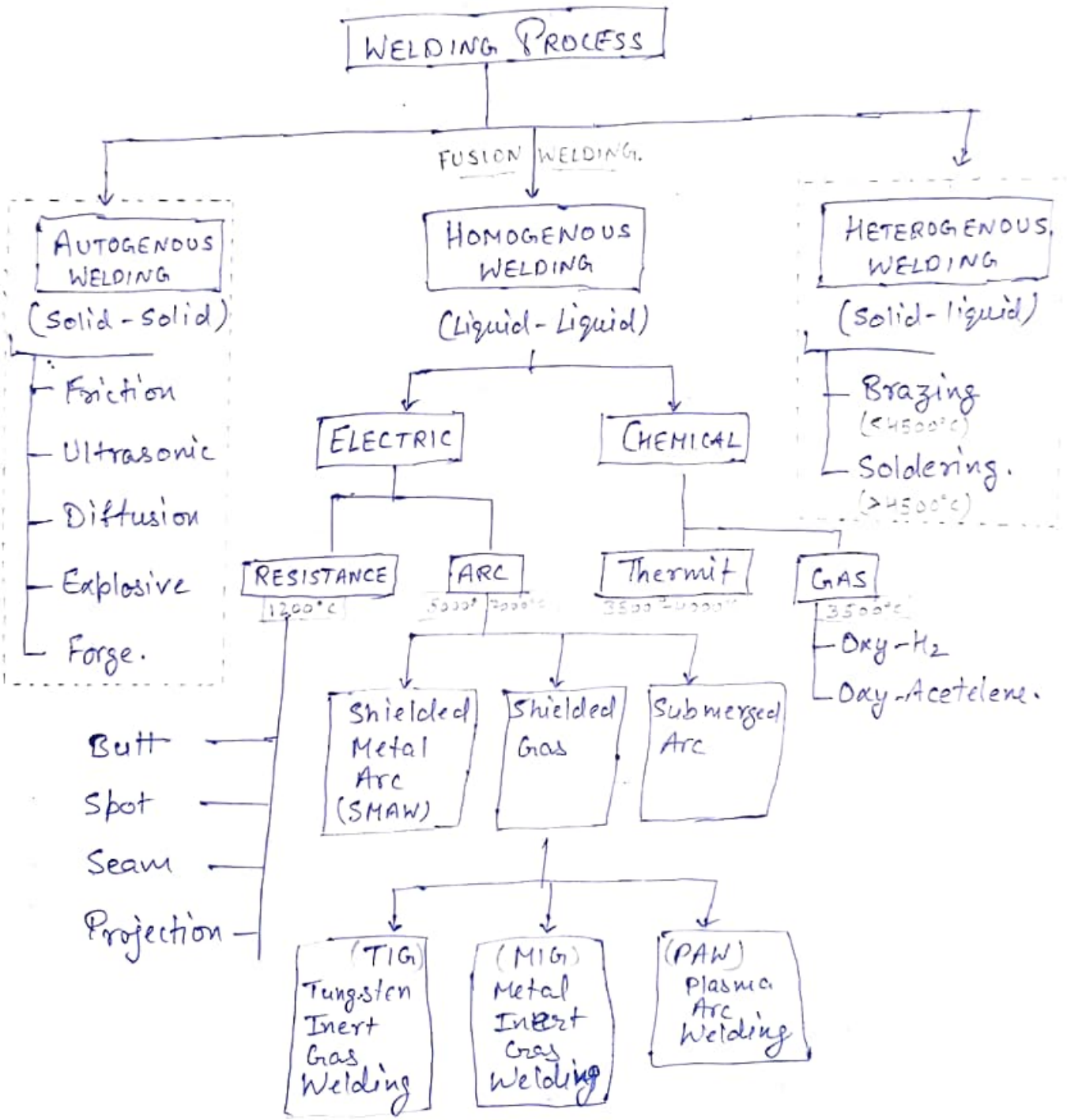
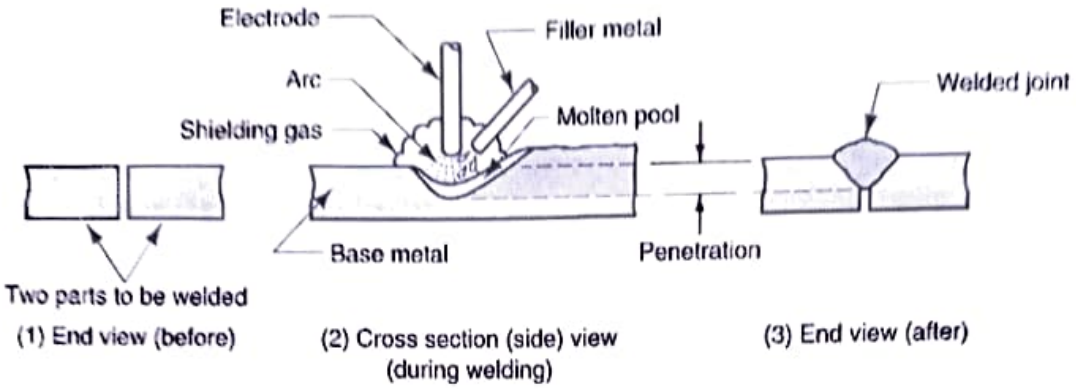
WELDING PROCESS

It is defined as the process of joining two similar or dissimilar materials,
with or without the application of heat,
with or without the application of pressure,
with or without the application of filler material.

WELDING CLASSIFICATION



CONCEPT OF WELDING

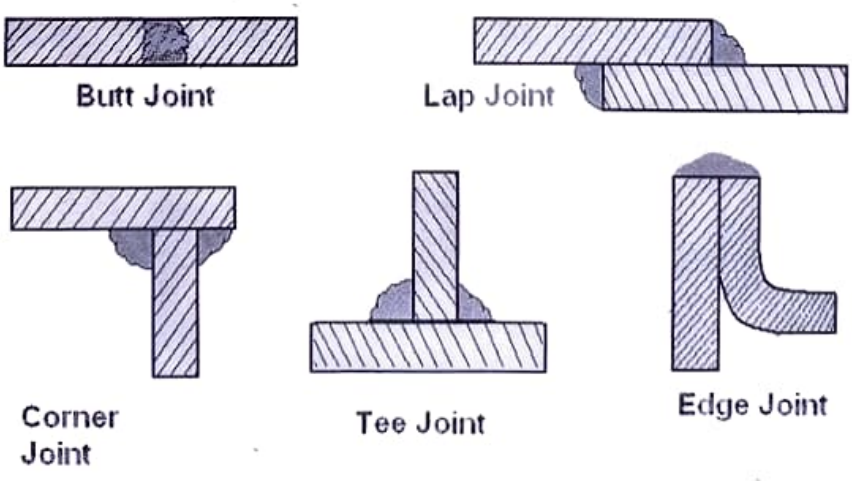


* A concentrated heat source melt the material in the weld area; the molten area then solidifies to join the pieces together.
* Sometimes a filler material is added to the molten pool to strengthen the weld.

TYPES OF WELDING JOINTS

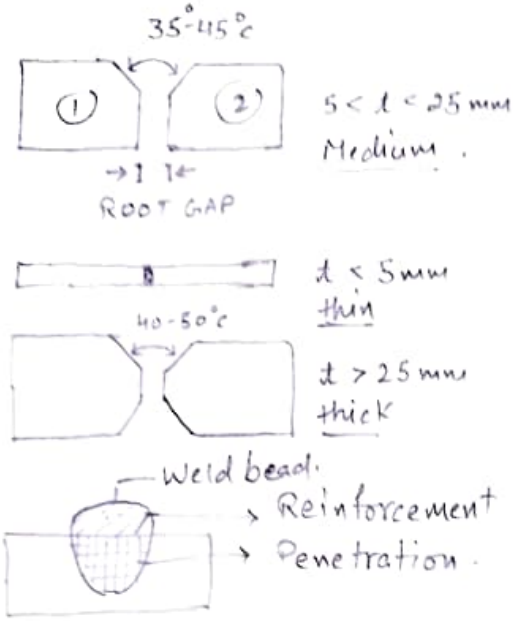
1. Lap Joint
2. Butt Joint
3. Corner Joint
4. Edge Joint
5. T-Joint.

Welding Joints

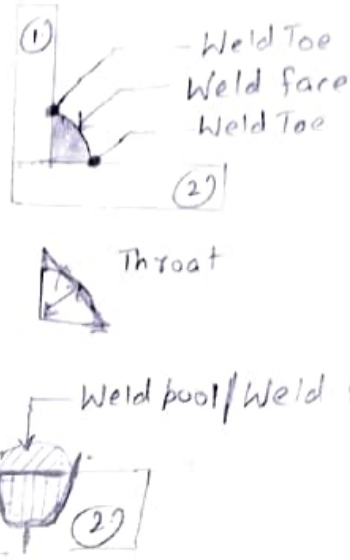


IINOLOGIES USED IN WELDING:

BUTT JOINT



FILLET WELD



Base Metal: The metal to be joined or cut is termed as the base metal.

Weld Pool: The amount of liquid metal b/w the two workpiece before Joining.

Weld Bead: The amount of material which is added into the workpiece in a single pass.

Weld Pass: A single movement of the welding torch or electrode along the length of the joint, which results in a bead, is a weld pass.

Root Gap: It is the shortest distance b/w the two workpiece before Joining.

Toe: It is the junction b/w workpiece and weld face.

Throat: Shortest distance b/w root & weld face. It is the weakest section in a fillet.

Deposition rate: The rate at which the weld metal is deposited per unit time (kg/hr).

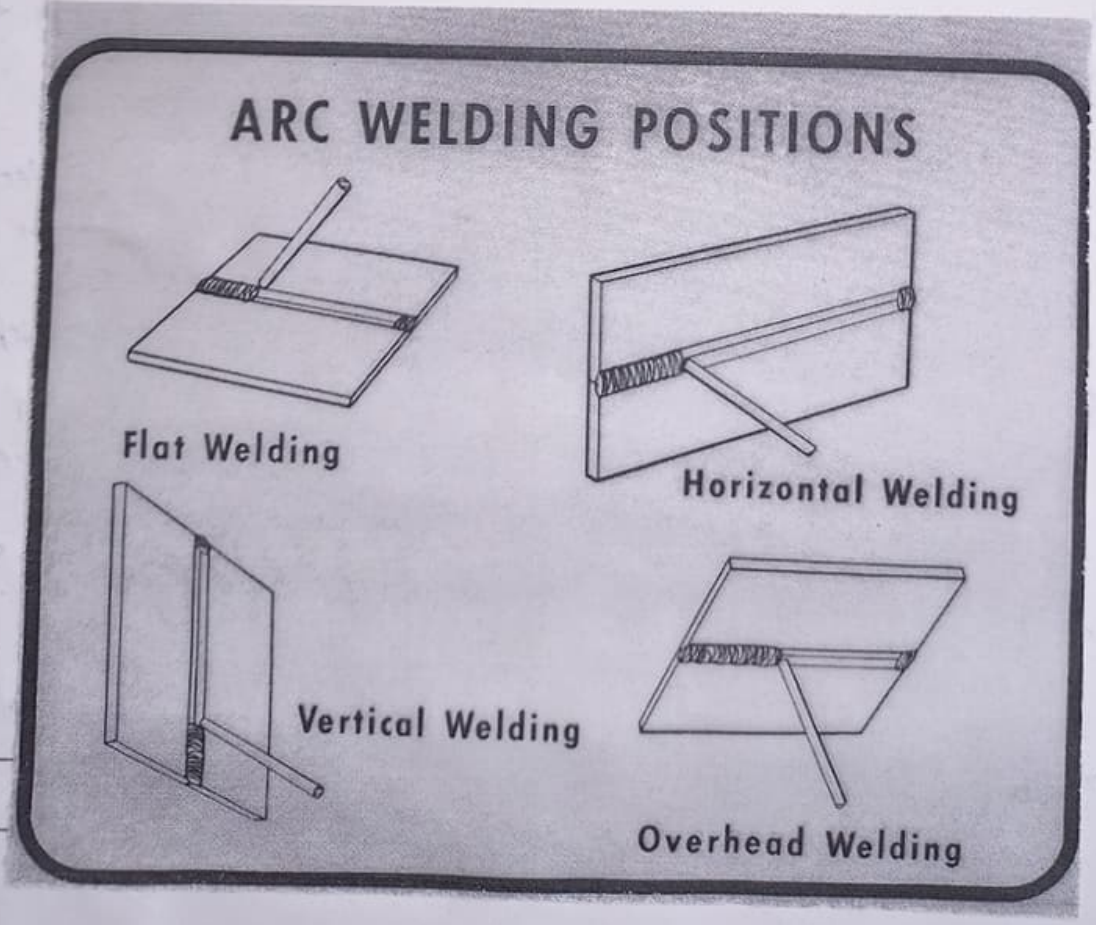
Penetration: It is the depth upto which the weld metal combines with the base metal as measured from the top surface of the joint.

3 < t < 5mm 8 < t < 16mm t > 16mm t > 20mm

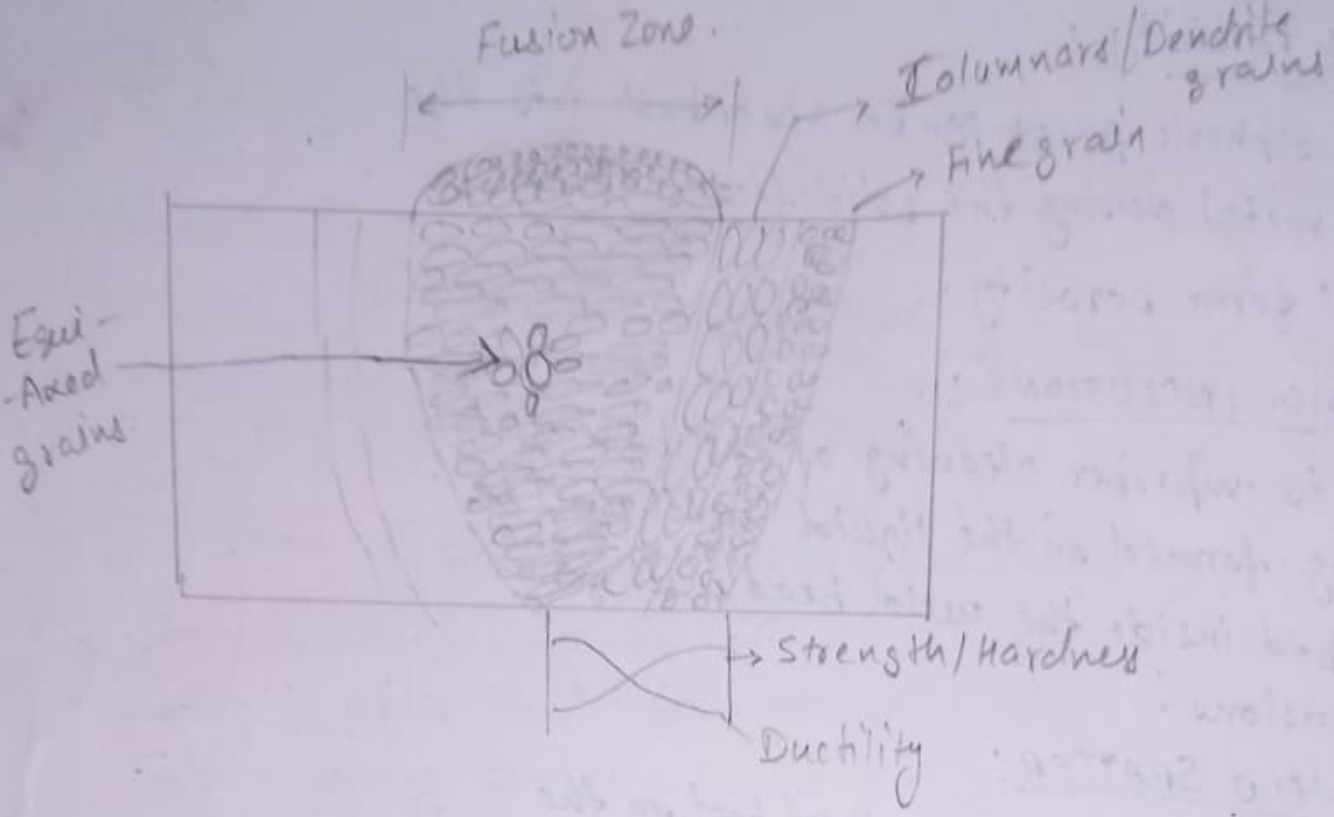
(a) Square (b) Single V (c) Double V (d) Double U

Edge preparation:
- In order to obtain good welded joint.
- ~~Edges~~ are cut at a certain angle
- Cleaning of face is done.

Welding Position
(a) Flat (b) Horizontal (c) Vertical (d) Overhead.



WELD BEAD CHARACTERISTICS :



WELDABILITY :

Weldability of a metal is the ease with which two similar or dis-similar metals are joined by fusion with or without the abblication of press. and with or without the use of filler metal.

(1) $T_{melting}$ ↑ → ↓

(2) K ↑ → ↓

(3) coeff. of linear Expansion (↑) → ↓

(4) % of Carbon (↑) → ↓

(5) Oxide formation (↑) → ↓ tendency