

## SHEET METAL

① What is the full name of SWG, HR sheets, CRCA sheets, GI sheets?

Ans SWG → Standard Wire Gauge

HR sheet → Hot Rolled sheet.

CRCA sheet → Cold Rolled Close Annealed sheet.

GI sheet → Galvanized Iron sheet.

② Name various sheet metal forming processes and the tools used to perform each of these process.

Ans i) Holding - Bench vice

ii) Bending - Rolling machine

iii) Curling - Leaf bender

iv) Seaming - Seamer

v) Reming - Bralque Press

③ Name a few sheet metal working process and the tools used to perform each of these process.

Ans i) Measuring - steel rubber

ii) Marking - scriber

iii) Cutting - snip

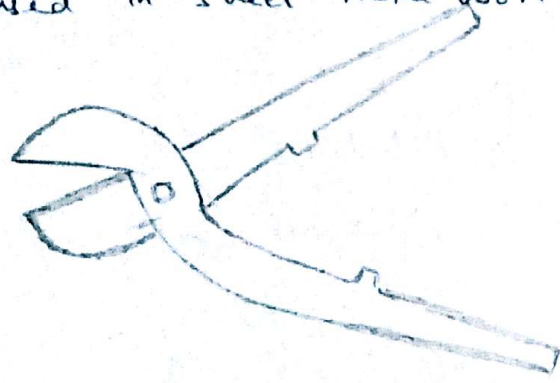
iv) Forming - staker

v) Joining - Rivet set

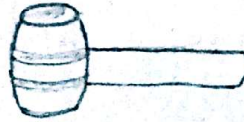


Q Draw the following tools used in sheet metal work.

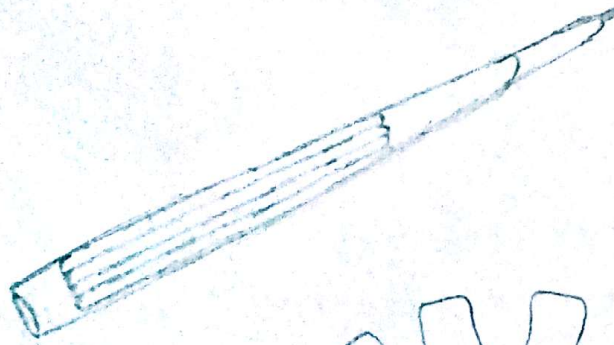
(i) Hand shears



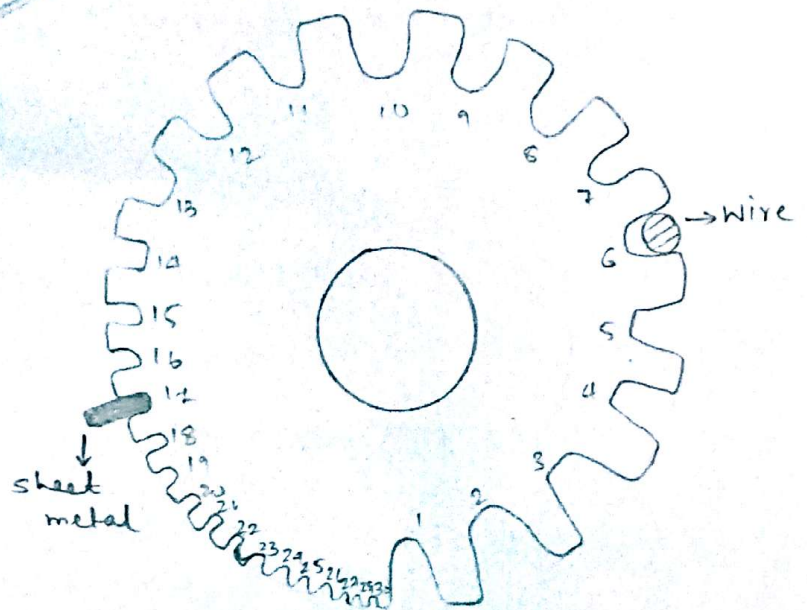
(ii) Round mallet



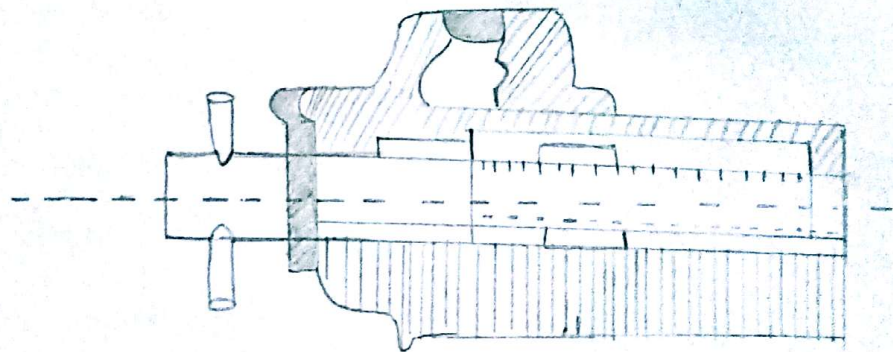
(iii) Brick pinch



(iv) Sheet metal gauge



(v) Bench vice





## WELDING SHOP

① What is weldability?

Ans Weldability have been defined as the capacity of being weld into inseparable permanent joints having specified properties such as definite weld strength & proper structure. It a particular metal is to have good weldability in fabricated structure. It can also refer to how ~~a~~ easy a difficult it is to achieve a functional weld.

② Describe MMAW and Gas welding.

In MMAW, arc welding a metal rod is used as an electrode (consumable) while the work being melted is used as another electrode. The arc is formed between the work and the electrode.

Gas welding:- Gas welding also known oxy-acetylene gas welding is a mixture of oxygen and acetylene, burns as an intense flame, at approximately 3500 degree centigrade. It can be used for brazing, bronze welding, forging/shaping metal.

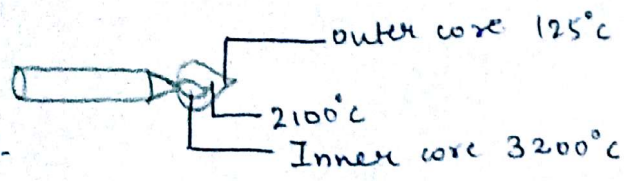
③ Describe three types of flames in Gas welding with sketch.

Ans a) Neutral flames :- It has two definite zone.

- A sharp brilliant cone extending a short distance from the tip of the torch it develops heat.
- Outer cone or envelope only faintly illuminated and of a bluish color. It prevents molten metals from oxidation. The neutral flame is used for cast iron, copper, aluminium etc.



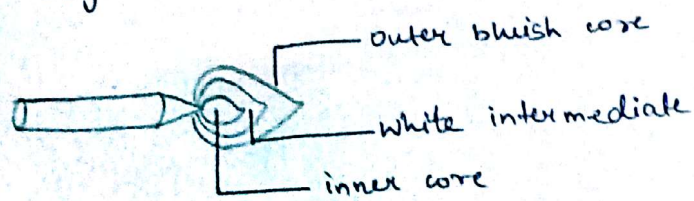
(b) Car burning flame :-



This flame has 3 zones:-

- sharply defined inner zone.
- An intermediate core of whitish colour.
- Bluish outer core.

The length of intermediate core is an indication of the properties of excess acetylene in the flame.



c) Oxidising flame :-

It has excess of oxygen

It also has 2 zones namely -

- The small inner core which has purplish color.
- The outer core or envelope. It is used to weld brass, etc.



④ What are the function of flux used in electrodes?

In high temperature metal joining process (welding, brazing and soldering), the primary purpose of flux is to prevent oxidation of the base and filler materials. Tin-lead solder (e.g) attaches very well to copper, but poorly to various oxides of copper, which form quickly at soldering temperatures. It is just used to shield the weld metal from the  $O_2$  &  $N_2$  of the air as ~~the~~ it is being transformed across the arc. It stabilizes the arc while welding.



Describe different types of welding joint.

- Lap joint - It is used to join two overlapping plates so that the edge of each plate is welded to the surface on another.

- Butt joint - Used to join ends or edges of two plates or surfaces located approximately in the same plane.

- Corner joint - It is used to join the two edges of two plates where surface area at an angle approximately  $90^\circ$  to each other.

- Edge joint - It is used in joining the two parallel plates by the means of weld.

⑥ Safety precautions in welding shop.

- Welding should not be done around combustible or inflammable materials where sparks may cause fire.

- Face shield and hand gloves should be used while welding.

- Cables should be properly insulated.

- Machine should be turned off when leaving the work.