

LESSON PLAN

Date _____

Trade:- Welder

Name _____

Week No:- Two

Subject:- Introduction and definition of welding. Arc and gas welding equipments , tools and accessories. Various welding process and its application. Arc and gas welding terms and definitions.

Motivations:- in previous week we learned about general discipline ,safety , first aid and importance of welding in industry.

PREPARATION:- Teaching Aids:-Chalk ,Charts,

INTRODUCTION:- Welding is used for making permanent joints. It is used in the manufacture of automobile bodies, aircraft frames, railway wagons, machine frames, structural works, tanks, furniture, boilers, general repair work and ship building.

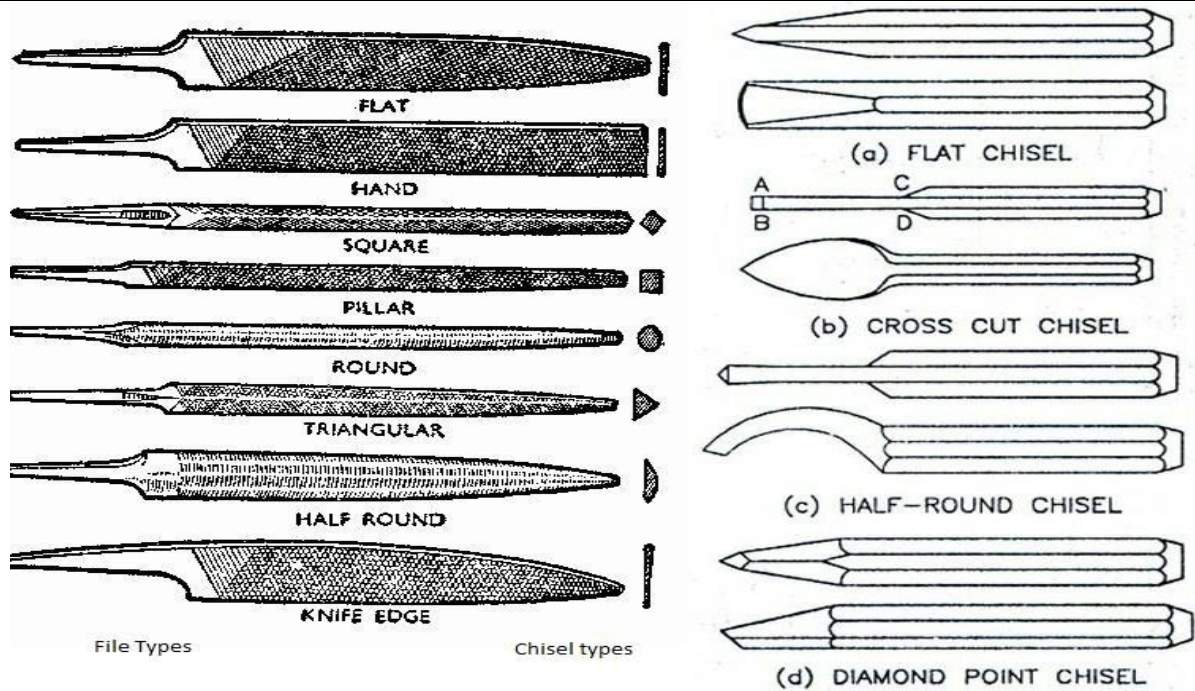
PRESENTATION:-

Topic	Information Point	Spot Hint
Welding	Welding is a materials joining process which produces coalescence of materials by heating them to suitable temperatures with or without the application of pressure or by the application of pressure alone, and with or without the use of filler material.	
Types	<ul style="list-style-type: none"> • Plastic Welding or Pressure Welding The piece of metal to be joined are heated to a plastic state and forced together by external pressure (Ex) Resistance welding Fusion Welding or Non-Pressure Welding The material at the joint is heated to a molten state and allowed to solidify (Ex) Gas welding, Arc welding 	
<u>Classification of welding processes:</u>	<p style="text-align: center;">Arc welding</p> <ol style="list-style-type: none"> 1. Carbon arc 2. Metal arc 3. Metal inert gas 4. Tungsten inert gas 5. Plasma arc 6. Submerged arc 7. Electro-slag <p>Gas Welding:-</p> <ol style="list-style-type: none"> 1. Oxy-acetylene 2. Air-acetylene 3. Oxy-hydrogen <p>(iii). Resistance Welding</p> <ol style="list-style-type: none"> 1. Butt 2. Spot 3. Seam 4. Projection 5. Percussion <p>(iv) Thermit Welding</p> <p>(v) Solid State Welding</p>	

	<ol style="list-style-type: none"> 1. Friction 2. Ultrasonic 3. Diffusion 4. Explosive <p>(vi) Newer Welding</p> <ol style="list-style-type: none"> 1. Electron-beam 2. Laser <p>(vii) Related Process</p> <ol style="list-style-type: none"> 1. Oxy-acetylene cutting 2. Arc cutting 3. Hard facing 4. Brazing 5. Soldering 			
Arc and gas welding tools ,equipments and accessories	<ol style="list-style-type: none"> 1. Marking tools 2. Measuring Tools. 3. Cutting Tools 			
Tool name	Types of tool	Specifications and parts	Materials	Size
Snip	<ol style="list-style-type: none"> 1. Straight 2. Bent 	Cutting edge 87 degree	High carbon steel	200-300-400 mm
Shear machine	<ol style="list-style-type: none"> 1. Stock shear 2. Block shear 3. Bench shear 4. Power shear 	Cutting edge 87 degree Handle, fixed blade, movable blade	High carbon steel	According to cutting capacity
Hacksaw	solid and adjustable	Frame and blade	High carbon steel	200-250-300 mm
Chisel	Flat, cross cut, diamond point, round nose, side cut, cow mouth	Cutting edge 35-70 degree	High carbon steel	150-200-250 and as per need
File	According to shape- Flat file, hand file, square file, pillar file, triangular file, round file, half round file, knife edge file	According to length- 100 mm to 400 mm	According to grade- rough file, bastard file, second cut file, smooth file, dead smooth file	According to cut- single cut, Double cut, curved cut, rasp cut
Steel rule	Made by spring steel and measured in mm and inches both, least count 0.5 mm. available in size 150mm, 300mm and 600mm			
Caliper	Use for internal and external diameter/size . Three types – Inside, outside and odd leg. Available in 4'', 6'',8'',12'' sizes.			
Divider	Use for make an arc or divide . Types- simple joint, firm joint, needle point, spring type. Available in 4'', 6'',8'',12'' sizes.			
Scriber	Use for scrub in marking. Types-ordinary, improved, adjustable, pocket, knob. Available in 6'' and 8'' sizes.			
















Try square	Use for right angle checking. Parts blade and stock. Sizes 100-150-200 mm
Punch	Use for punching the marking line, edge prepare 60 degree. Type dot punch. Prick punch etc.
Hammer	Types –ball pein , cross pein, straight pein. Available by weight.
Steel tape	Use for measure length. Available in meter and foot.
Tong	Use for pick hot job/part in weld shop. Types-Flat open mouth, flat close mouth, pickup , hollow bit, side, angle iron.
Vice	Use for all purpose to pick and tight the job. size measured from jaw.parts name- fixed jaw, movable jaw, jaw plates, spindle, handle, box nut/guide nut and spring.

Rest of above screw driver, spanner set, clamp, zig and fixture, chipping hammer, wire brush, electrode holder, earth clamp, hand screen, helmet, leg guard, hand sleeve, Apron and safety shoes.



Marking and measuring tools



A		B	
1. Phillips screw	       	I. 	
2. Box wrench		J. 	
3. Scraper		K. 	
4. Square file		L. 	
5. C-clamp		M. 	
6. Steel tape		N. 	
7. Cold chisel		O. 	
8. Machinist vise		P. 	
9. Ball peen hammer			
10. Hand vise			
11. Open- ended wrench			
12. Hack saw			
13. Steel rule			
14. Helical-ratchet screw driver			
15. Chipping hammer			

Questions:-

1. Write three general discipline of ITI.
2. What is elementary first aid?
3. Write five safety points in workshop.

Assignment:-

Discipline in the institute. Elementary first aid. Importance of welding in industry. Safety precaution in shielded metal arc welding, oxy-acetylene welding and cutting.

Next lesson:- Introduction and definition of welding. Arc and gas welding equipments , tools and accessories. Various welding process and its application. Arc and gas welding terms and definitions.

Checked By _____

Instructor _____