

1. In straight polarity welding
 - a) electrode is connected to the positive and work to negative
 - b) electrode is connected to negative and work to positive**
 - c) work is positive and electrode is earthed
 - d) electrode is positive and work is earthed

Ans: b

Straight Polarity: In straight polarity, the **electrode is having a negative terminal while the workpiece is connected to the positive terminal of the direct current power source.** ... Due to lower heat generation at the electrode end, the melting rate of the electrode reduces causing a low deposition rate

“Straight” and “reverse” polarity are common terms for “electrode-negative” and “electrode-positive” polarity. Welding currents with electrode-positive (reverse) polarity result in deeper penetration, while electrode-negative (straight) polarity has the benefit of faster melt-off and faster deposition rate. Different shielding gases may further affect the weld as well.

How do AC and DC currents differ in welding?

In shielded metal arc welding (SMAW), DC is widely used because of its many benefits. Welding with DC creates smoother and more stable arcs, you can strike the arc more easily, there are fewer arc outages and less spatter, and vertical up and overhead welding is also less complicated. However, AC can be the preferred choice of beginners like welding training students, as it is frequently used with low-cost, entry-level welding machines. AC is also common in shipbuilding welding or in any conditions where the arc may blow from side **to side**

<https://www.tws.edu/blog/welding/understanding-welding-current-and-polarity/>

2. When a boat enters the sea from river

(1) it floats higher	(2) sinks deeper
(3) keeps the same depth	(4) sinks completely

Ans: 1 (because density of salty sea water is higher than river water)
3. When a boat enters the river from sea

(1) it floats higher	(2) sinks deeper
(3) keeps the same depth	(4) sinks completely

Ans: 1 (because density of river water is lighter than the sea water)

4. The most important weld defect is –
 a) undercut (2) blow holes (c) **Improper penetration** (d) spatters

Ans: c

5. The welding wire brush is made up of
 a) copper wire (b) **steel wire** (c) Iron (d) none

Ans: b

6. In which position leather sleeves are used?
 a) Horizontal and down hand (b) parallel
 (c) all positions (d) **vertical and overhead**

Ans: d

7. In case of electrical efficiency is high in case of -----
 a) DC generator (b) **AC transformer** (c) AC/DC rectifier (d) none

Ans: b

Efficiency of Transformer

Just like any other electrical/mechanical machine, **efficiency of a transformer** can be defined as the output power divided by the input power. That is

$$\text{efficiency} = \text{output} / \text{input} .$$

Transformers are the most highly efficient electrical devices. Most of the transformers have full load efficiency between 95% to 98.5% . As a transformer being highly efficient, output and input are having nearly same value, and hence it is impractical to measure the efficiency of transformer by using output / input. A better method to find efficiency of a transformer is using, **efficiency = (input - losses) / input = 1 - (losses / input)**.

<https://www.electriceasy.com/2014/04/transformer-losses-and-efficiency.html>

8. There are No. of carbon brushes in DC generator
 a) one (b) two (c) three (d) **none**

Ans:d

9. In an acetylene cylinder the acetylene is dissolved in
 a) carbon-dioxide (b) water (c) Oxygen (d) acetone

Ans: d

10. All kinds of ferrous and non-ferrous metals can be welded by using
 a) DC generator (b) AC transformer (c) AC generator (d) none

Ans: a

11. Can provide both straight and reverse polarity –
 a) AC transformer (b) DC generator
 (c) AC/DC transformer (d) none

Ans: b

12. Current flow of diversion in between the electrodes and work place is called
 a) surface weld (b) polarity (c) Arc Blow (d) None

Ans: b

13. In which polarity will give deep penetration –
 a) straight polarity (b) reverse polarity (c) parallel polarity (d) none

Ans: a

14. Additional filler metal is not used for
 a) fusion welding (b) pressure welding (c) arc welding (d) none

Ans: b

16. Argon gas is used in welding stainless steel because
 a) it melts electrodes (b) it is inert (c) it prevents porosity (d) it is organic

Ans: b

17. The depression at the end of the weld bend is called as
 a) blow holes (b) improper penetration
 (c) crater (d) improper fusion

Ans: c

18. CO₂ welding is advantage over MMA welding because –
 a) the equipment is cheaper (b) continuous wire feeding
 (c) less spatters (d) easy to handle
 Ans: b
19. Wider weld in a single run is called –
 a) proper fusion (b) wearing (c) diversion of weld (d) none
 Ans: b
20. Thermit welding is used to repairing (or) joining
 a) Structural frames (b) rails (c) angles (d) none
 Ans: b
21. In atomic arc welding arc is maintained between-
 a) flux coated electrode (b) Tungsten electrode
 (c) carbon electrode (d) none
 Ans: b
22. 'TIG' stands for
 a) Tungsten inert gas (b) technical institute of garments
 (c) none (d) All of these
 Ans: a
23. In 'MAG' welding which gas is used to shield the weld metal
 a) oxygen (b) CO₂ (c) Acetylene (d) none
 Ans: b
24. This weld defects can be seen only on the X-rays of the weld joints
 a) improper fusion (b) blow holes (c) spatters (d) none
 Ans: b
25. Given a choice of welding sets for arc welding one would prefer to use
 a) DC generator (b) AC generator

- (c) auto transformer (d) a rectifier machine

Ans: a

26. Magna flux testing of weld joints is done to check for

- (a) Improper penetration (b) weld crack
(c) blow holes (d) undercut

Ans: b

27. During arc welding, the correct angle of the electrode with the weld line is

- (1) 90 (2) 40 – 50 (3) 70 – 80 (4) 45

Ans: 3

28. If the main electric supply is not available, we can do arc welding with

- (1) Motor generator set (2) transformer set
(3) Engine generator set (4) Rectifier set

Ans: 3

29. The amount of current setting for welding depends upon

- (1) the thickness of plate (2) type of current A.C. or D.C.
(3) the type of metal to be welded (4) diameter of electrode used

Ans: d

30. The function of filler rod in gas welding is

- (1) to increase the strength of the joint
(2) to obtain proper size of weld and to add additional element
(3) to increase the fluidity
(4) to obtain good penetration

Ans: 2

31. If oil, paint, grease and rust are not removed from the joining surface, the weld will be

- (1) Ductile (2) out of shape
(3) weak and brittle (4) will have less fluidity

Ans: 3

32. The little hole produced at the leading edge of the crater right under the tip of electrode is called

- (1) Blow hole (2) key hole (3) pin hole (4) root

gap

Ans:3

33. The angle of electrode in welding lap joint in flat position is

(1) 80° angle to the line of weld and 45° each surface

(2) 60° between the weld faces

(3) same as but joint

(4) perpendicular to the plate surface

Ans: 1

34. Glycerin is added to water filled hydraulic back pressure valve in order to

(1) prevent overheating

(2) freezing

(3) to avoid vibration of the filled medium (4) remove salt content

Ans: 3

35. When a hose protector is fitted and the valves are open, the gas can flow

(1) from the blow pipe to the cylinder

(2) from the cylinder to the blow pipe

(3) both ways

(4) will not blow at all

Ans: 2

36. The effect of arc blow will be totally absent in:

(1) D.C. straight polarity

(2) D.C. reverse polarity

(3) A.C. Welding

(4) welding with long arc

Ans: 3

37. Heavy coated electrode is normally suitable for

- (1) welding in flat position
- (2) welding deep groove joint in vertical position
- (3) A.C. welding
- (4) welding thick plates in any position

Ans:4

Shielded Arc or *Heavy Coated Electrodes* — The shielded arc or *heavy coated electrodes* are used for welding steels, cast iron, and hard surfacing.

Suitable for all sorts of joining, repairing and fabrication of structural works in mild steels. The applications include; welding of Structures, bridges, automobile bodies, automobile parts, machinery fabrication, ships, tugs, barges, trawlers, dredgers, storage tanks, boilers, containers etc.

38. Identify the type of electrode the deposit the maximum amount of weld metal per unit time

- (1) Iron powder electrode
- (2) low hydrogen electrode
- (3) deep penetration electrode
- (4) heavy coated SS electrode

Ans: 1

39. The main function of injection in L.P. blow pipe is

- (1) high pressure oxygen draws acetylene and increases in velocity
- (2) decrease the velocity of oxygen equal to acetylene velocity
- (3) to check the flow of oxygen
- (4) to increase the velocity of oxygen

Ans:3

40. The nozzles are generally made of copper because

- (1) rust will not take place
- (2) able to get air tight fittings due to its fine threads

- (3) it is cheaper
- (4) it has got high melting point

Ans: 1

41. The blow-pipe fitted with injector will prevent

- (1) flash back
- (2) reverse flow of acetylene gas
- (3) flow of high pressure oxygen
- (4) defects

Ans: 2

42. The size of the cutting nozzle to be used mainly depends on

- (1) purity of oxygen
- (2) thickness of material
- (3) duration of cut
- (4) type of cutting blow pipe.

Ans: 2

43. If too little cutting oxygen is supplied

- (1) metal will be cooled down
- (2) kerf will be narrow
- (3) kerf will be wide
- (4) metal will fail to cut completely

Ans: 4

44. The small metal particles which are thrown out of the arc during welding are

Called

- (1) Slag
- (2) weld metal
- (3) spatters
- (4) stub

Ans: 3

45. A hair line separation in root or middle or surface of the weld metal or base metal is mainly due to

- (1) Slowly cooling
- (2) larger dia electrode

(3) Long arc length
heating

(4) lack of pre-heating and post heating

Ans: 4

46. The choice of flux depends upon

- (1) type of material to be joined
(2) thickness of material
(3) welding position
(4) type of fuel gas

Ans: 1

47. The suitable filler rod for bronze welding of copper is

- (1) brass filler rod
(2) copper filler rod
(3) manganese bronze filler rod
(4) silicon bronze filler rod

rod

Ans: 2

48. The suitable flux for welding of cast iron is:

- (1) sodium borate
(2) chlorides and fluorides of potassium
(3) lithium chloride
(4) magnesium chloride

Ans: 1

49. The gap between the plates in butt welding is given to:

- (1) control distortion
(2) avoid undercut
(3) control penetration
(4) prevent gas pockets

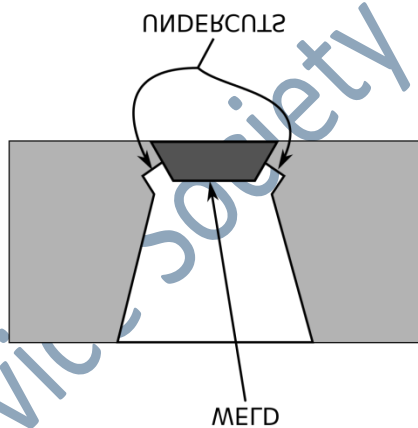
Ans: 3

In the design of butt weld strength, it is generally assumed that its strength is at least equivalent to the parent metal. To enhance proper welding operation, the gap between two metals to be welded should not be too small, otherwise the root would be inadequately fused during welding and the butt weld strength would be reduced. On the other hand, the gap should be not set too large because the weld metal would simply pass through it. The function of the gap between adjoining root faces is to increase the depth of penetration

down to the root of the weld. However, it is not always possible to have access to both sides of the butt weld. Hence, the use of backing plates or rings can enhance the quality of welding from one side only. By inserting a backing plate inside the steel member, the correct alignment could be maintained and certain amount of tolerance on longitudinal fit can be permitted.

<https://www.engineeringcivil.com/what-is-the-function-of-gap-between-adjoining-root-faces-in-butt-weld.html>

In welding, **undercutting** is when the weld reduces the cross-sectional thickness of the base metal. This type of defect reduces the strength of the weld and workpieces. One reason for this defect is excessive current, causing the edges of the joint to melt and drain into the weld; this leaves a drain-like impression along the length of the weld. Another reason is if a poor technique is used that does not deposit enough filler metal along the edges of the weld. A third reason is using an incorrect filler metal, because it will create greater temperature gradients between the center of the weld and the edges. Other causes include too small of an electrode angle, a dampened electrode, excessive arc length, and slow speed.



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[https://en.wikipedia.org/wiki/Undercut_\(welding\)#/media/File:Welding_undercut.svg](https://en.wikipedia.org/wiki/Undercut_(welding)#/media/File:Welding_undercut.svg)

50. What do the 'drag' lines on kerf wall indicate

(1) oxygen pressure

(2) speed of the cutter

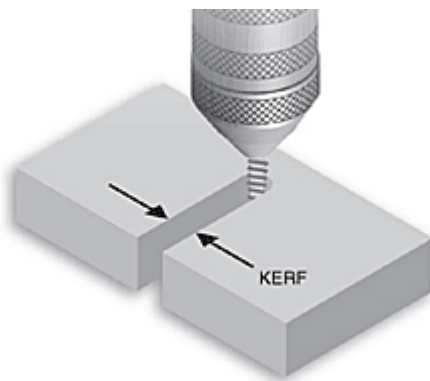
(3) nozzle size
work

(4) height of the nozzle from

Ans:2

Kerf = Width

Kerf is defined as the width of material that is removed by a cutting process. It was originally used to describe how much wood was removed by a saw, because the teeth on a saw are bent to the side, so that they remove more material than the width of the saw blade itself, preventing the blade from getting stuck in the wood.



When talking about CNC shape cutting with typical cutting processes, kerf is the width of material that the process removes as it cuts through the plate.

Why kerf width is important

When cutting parts on a CNC plasma or laser machine, you want to produce accurate cut parts, with final dimensions as close as possible to the programmed shape. So if you program a 6" by 6" square, and the plasma arc removes 0.200" of material, as it cuts, then the resulting part is going to be 5.8" by 5.8". So the actual tool path has to be compensated by 0.100" to the side of the programmed path, all the way around the part.

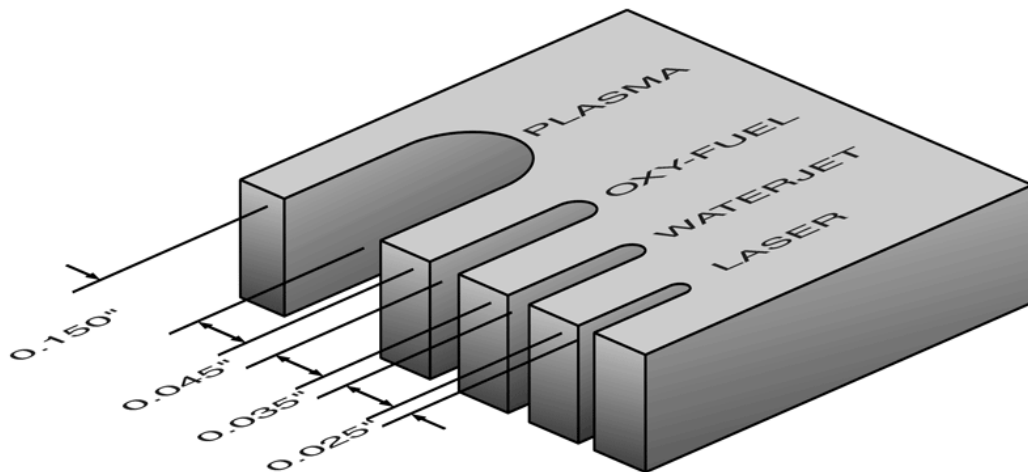
Rather than re-program the part at a different dimension, the CNC will take care of this automatically just by telling it which direction to offset, and by how much. Most modern CNCs take the actual kerf amount and automatically offset the tool path by 1/2 of that amount, so that the finished part comes out very close to the programmed dimensions. That is why the kerf value is often referred to as "kerf offset".

Kerf for every process is different

Each cutting process removes a different amount of material, or kerf. The more precise processes, like waterjet and laser, remove a smaller amount of kerf, which is one of the reasons they can be more precise! A typical example shown here is for 1/2" thick mild steel.

Typical Kerf Width for 1/2" thick C.S.:

- Plasma: 0.150"
- Oxy-Fuel: 0.045"
- Waterjet: 0.035"
- Laser: 0.025"



Kerf variations

Not only does kerf width vary from one process to the next, but there are lots of things that affect the kerf width for each process. Of course, as the thickness of material increases, it takes more power to cut through it. In the case of plasma, that means higher current and a larger nozzle. Laser increases power. Oxy-fuel cutting uses a larger nozzle with a wider cutting oxygen stream and hotter preheats. Waterjet uses either a larger nozzle/orifice combination, or a slower cutting speed. Regardless of the process, as the plate gets thicker, the kerf gets wider.

There are variations within each process too. For example, when plasma cutting, the actual kerf width depends not only on the cutting current, but also on the torch height, speed, and gas settings.

How kerf offset is adjusted

Kerf offset is traditionally adjusted by the machine operator at the CNC. Prior to running a program, the operator must enter the kerf width so that the CNC can calculate the actual tool path required to cut the part to the correct dimensions.

Modern thermal cutting and waterjet machine controls will also allow the kerf width value to be included in the part program, or to be called from a process database stored in the CNC. This makes it much easier for operators, since they don't need to look up the values for each material type and thickness they cut, but rather they simply select the material type and thickness, then the CNC looks up all of the process variables in the database.

<https://www.esabna.com/us/en/education/blog/what-is-cutting-kerf.cfm>

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