



**School of Metal Construction Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, 1st Semester,
2nd In-Sem. Examination**

Course Code: MCS1104

Course Name: Tungsten inert gas welding (GTAW)

Time: 1 Hour

Max. Marks: 20

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

1. Which of the following welding process uses a non-consumable welding electrode?
 - (a) TIG
 - (b) MIG
 - (c) MAG
 - (d) MMA

2. Which of the following welding process has lowest deposition rate as compared to others?
 - (a) FCAW
 - (b) MMA
 - (c) MIG
 - (d) PAW

3. Which of the following gas mixture is used in TIG welding?
 - (a) Argon + CO₂
 - (b) Argon + He
 - (c) He + H₂
 - (d) Argon + N₂

4. TIG welding best suited for?



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

- (a) Mild steel
- (b) Stainless steel
- (c) Aluminum
- (d) Silver

5. Preheating is essential in welding for

- (a) High speed steel
- (b) Cast iron
- (c) Stainless steel
- (d) Silver

Section – B

03X02 = 06 Marks

Q6. What is the advantage of pulse TIG welding?

Q7. Can you TIG weld without gas? Also tell why?

Q8. Can you TIG weld with co₂? Also tell why?

Section – C

03X03 = 09 Marks

Q9. Compare TIG welding process in terms of advantage and disadvantages.

Q10. What are the applications of TIG welding?

Q11. Write the execution of TIG welding.

Rishi Bas
12/01/2024



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.:

School of Metal Construction Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, 1st Semester,
2nd In-Sem. Examination

Course Code: MCS1104

Time: 1 Hour

Course Name: Tungsten inert gas welding (GTAW)

Max. Marks: 20

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

1. Which of the following welding process uses a non-consumable welding electrode?

(a) TIG
(b) MIG
(c) MAG
(d) MMA
2. Which of the following welding process has lowest deposition rate as compared to others?

(a) FCAW
(b) MMA
(c) MIG
(d) PAW
3. Which of the following gas mixture is used in TIG welding?

(a) Argon + CO₂
(b) Argon + He
(c) He + H₂
(d) Argon + N₂
4. TIG welding best suited for?

(a) Mild steel
(b) Stainless steel
(c) Aluminum
(d) Silver
5. Preheating is essential in welding for

(a) High speed steel
(b) Cast iron
(c) Stainless steel
(d) Silver



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Section – B

03X02 = 06 Marks

Q6. What is the advantage of pulse TIG welding?

Ans. Pulsed - current TIG welding has a number of advantages, including lower heat input and consequently reduces distortion and war page in thin work pieces. In addition, it allows for greater control of the weld pool, and can increase weld penetration, welding speed, and quality.

Q7. Can you TIG weld without gas? Also tell why?

Ans. Simply NO, you can't TIG weld without Gas! Gas is required to protect both the Tungsten Electrode and the weld pool from Oxygen.

Q8. Can you TIG weld with co2? Also tell why?

Ans. No, CO2 should not be used for TIG welding because, as it is a gas containing oxygen, it would cause oxidation and result in a bad weld. If either the melted filler material or the metal being welded is allowed to oxidize, the weld will fail

Section – C

03X03 = 09 Marks

Q9. Compare TIG welding process in terms of advantage and disadvantages.

Ans. Advantages of TIG:

It doesn't require any flux and this is because of the inert gas shields molten metal. Therefore, there are no hassles with the slag and inclusion of slag.

This welding machine will easily provide you with high quality and strong welding finishes.

The welding work done with this welding machine will provide you with neat and appealing joints and many times, they don't need any finishing process to be done on them due to the excellent welding work done with the TIG.

One can easily weld a wide range of materials with TIG.

This welding machine requires the minimum amount of flames and also sparks.

The small heat zone ensures that there is less amount of distortion when working with this welding machine.

One can easily work with this welding machine in both manual and automatic.

This welding machine is suitable for work with very thin sections, as there is less amount of heat applied when welding.

This welding machine offers versatile options when welding with a wide range of materials.

Disadvantages of TIG:

One can only weld thin materials with this welding machine. This is not suitable for the thick materials.

It will take a lot of time when welding. Welding with this welding machine is time consuming and the speed is slower than any other welding machines available in the market as well. It also has got lower filler deposition rate as well.

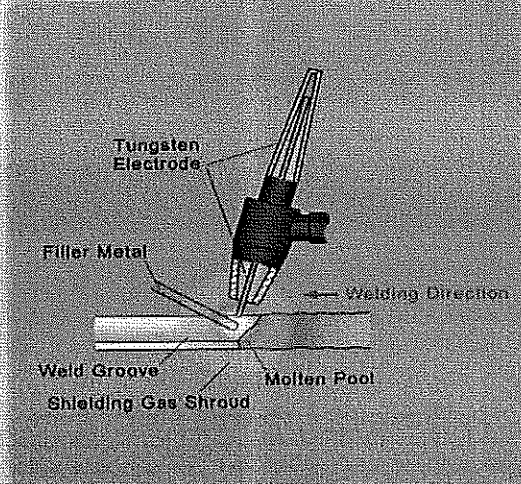
It has got high initial cost. It is quite complicated to be used and mostly used by the professionals and highly skilled welders.

Q10. What are the applications of TIG welding?

Ans.

Joining 2

Gas Tungsten Arc Welding (GTAW) Application



As already mentioned, gas metal arc welding (GMAW) is performed with a consumable wire electrode.

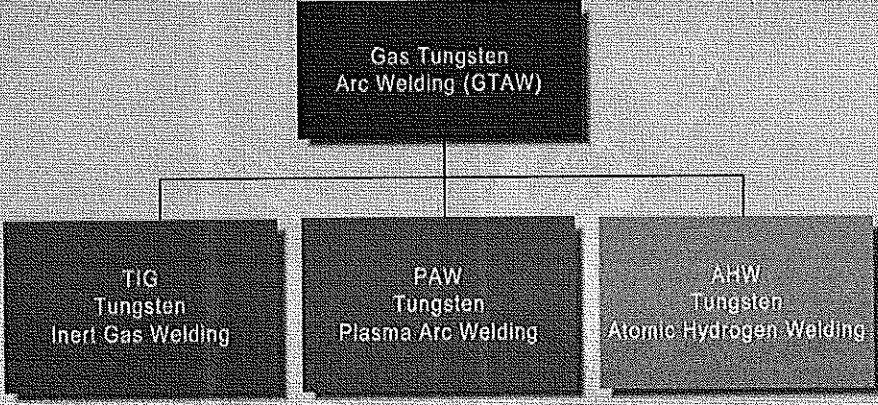
Gas tungsten arc welding (GTAW), in contrast, is performed with a non-consumable tungsten electrode.

The required filler metal is fed into the weld point in the form of a welding rod.

Joining 2

Gas Tungsten Arc Welding (GTAW) Application

Because tungsten inert gas welding (TIG welding) is the procedure most often used in the shop, the explanations that follow will focus exclusively on this procedure.



```

graph TD
    GTAW[Gas Tungsten Arc Welding (GTAW)] --> TIG[TIG Tungsten Inert Gas Welding]
    GTAW --> PAW[PAW Tungsten Plasma Arc Welding]
    GTAW --> AHW[AHW Tungsten Atomic Hydrogen Welding]
    
```

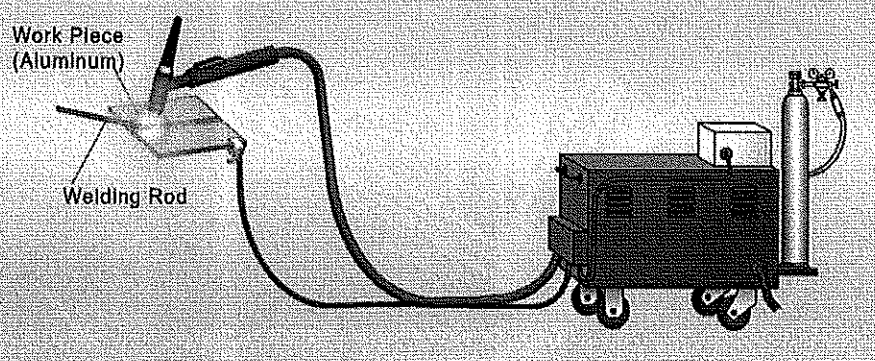
Joining 2

Gas Tungsten Arc Welding (GTAW)

Application

The deposition rate for tungsten inert gas welding is low.

Therefore, it is especially well suited for sheet metal up to 5 mm thick and for non-ferrous metals (e.g., aluminum).



Work Piece (Aluminum)

Welding Rod

▲ ◀ ▶ ...

Q11. Write the execution of TIG welding.

Ans.

Joining 2

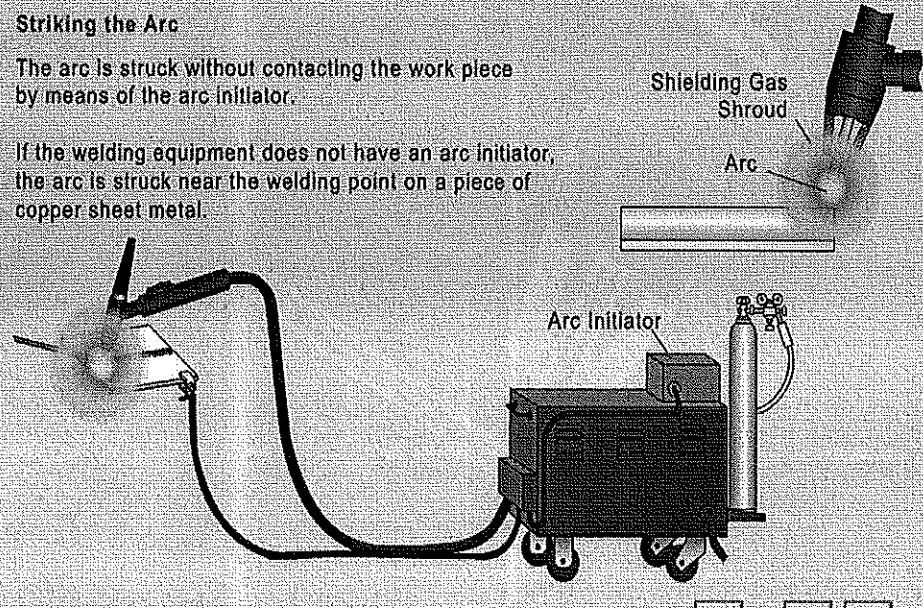
Gas Tungsten Arc Welding (GTAW)

Execution

Striking the Arc

The arc is struck without contacting the work piece by means of the arc initiator.

If the welding equipment does not have an arc initiator, the arc is struck near the welding point on a piece of copper sheet metal.



Shielding Gas Shroud

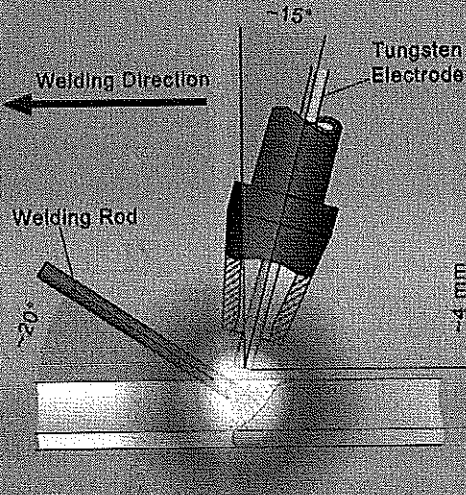
Arc

Arc Initiator

▲ ◀ ▶ ...

Joining 2

Gas Tungsten Arc Welding (GTAW) Execution



Working Technique

TIG welding is performed from right to left (right hander), with the torch following the welding rod.

During welding, the torch is inclined about 15° away from the welding direction.

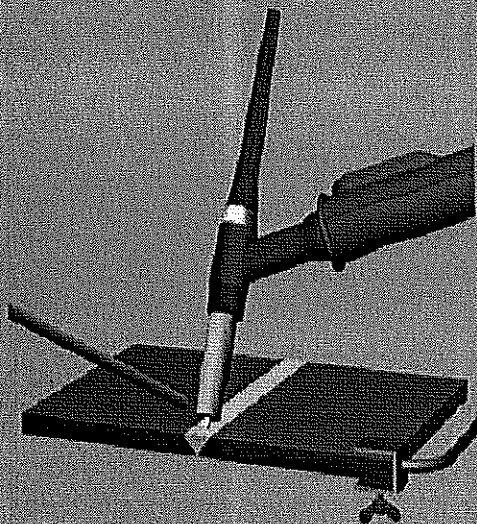
The welding rod is held at an angle of about 20° above the work piece plane.

The gap between the electrode tip and the work piece (arc length) should be between 3 and 5 mm.



Joining 2

Gas Tungsten Arc Welding (GTAW) Execution



Working Technique

During welding, the filler metal is fed by dipping it into the molten pool.

After the arc is extinguished, the shielding gas must continue to flow over the welding point until the molten pool has solidified.



Richard
12/01/2024



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.:

School of Metal Construction Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, I Semester,
2nd In-Sem. Examination

Course Code: MCS1105

Course Name: Inert Gas Welding (GMAW)

Time: 1 Hour

Max. Marks: 20

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

Q1. Weld symbol for square butt joint is

- | | |
|--------|-------|
| (A) II | (C) X |
| (B) V | (D) O |

Q2. Which of the carbon steel is most weld able

- a) 0.15% C
- b) 0.30% C
- c) 0.50% C
- d) 0.75% C

Q3. Welding voltage range for MIG/MAG welding in spray transfer

- | | |
|---------------|---------------|
| (A) 2v – 18v | (C) 18v -31v |
| (B) 31v - 54v | (D) 54v – 75v |

Q4. Which of the following process use consumable electrode?

- a) TIG welding
- b) Spot resistance welding
- c) MIG welding
- d) Laser Welding

Q5. Weld spatter is

- | | |
|----------------------|--------------------|
| a) Flux | (C) Welding defect |
| b) Electrode coating | (D) Welding test |



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Section – B

03X02 = 06 Marks

Q6. Write down ISO Codes for MIG, MAG and FCAW (with gas) welding.

Q7. Differentiate b/w MIG and MAG welding

Q8. What is FCAW? How this is different from MAG Welding.

Section – C

03X03 = 09 Marks

Q9. Write advantage of MIG/MAG welding.

Q10. Describe the kind of material transfer in MIG/MAG welding.

Q11. Draw labelled of MIG/MAG torch and explain two types of cooling.

Richinbas
12/01/2021



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.:

School of Metal Construction Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, I Semester,
2nd In-Sem. Examination

Course Code: MCS1105

Course Name: Inert Gas Welding (GMAW)

Time: 1 Hour

Max. Marks: 20

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

Q1. Weld symbol for square butt joint is

- (A) II (C) X
(B) V (D) O

Q2. Which of the carbon steel is most weld able

- a) 0.15% C
b) 0.30% C
c) 0.50% C
d) 0.75% C

Q3. Welding voltage range for MIG/MAG welding in spray transfer

- (A) 2v – 18v (C) 18v -31v
(B) 31v - 54v (D) 54v – 75v

Q4. Which of the following process use consumable electrode?

- a) TIG welding
b) Spot resistance welding
c) MIG welding
d) Laser Welding

Q5. Weld spatter is

- a) Flux (C) Welding defect
b) Electrode coating (D) Welding test



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Section – B

03X02 = 06 Marks

Q6. Write down ISO Codes for MIG, MAG and FCAW (with gas) welding.

Ans.

Gas-shielded Metal Arc Welding	13
Metal Arc inert gas welding: MIG-welding	131
Metal Arc inert gas welding: MIG-welding	132
Metal Arc inert gas welding: MIG-welding	133
Metal Arc active gas welding: MAG-welding	135
Flux-cored arc welding with active gas shield	136
Metal Arc active gas welding: MAG-welding	138

Q7. Differentiate b/w MIG and MAG welding

Ans. The only difference between MIG and MAG is the type of shielding gas used.

The make-up of the shielding gas is important as it has a significant effect on the stability of the arc, the metal transfer and the degree of spatter. The shielding gas also impacts the behavior of the weld pool, with particular regard to the penetration and mechanical properties of the welded joint.

Q8. What is FCAW? How this is different from MAG Welding.

Ans. The main difference between **flux cored arc welding** and **GMAW welding** is the way the electrode is shielded from the air. **Flux cored arc welding** just like the name implies, has a hollow wire with flux in the center, just as the name states, a 'Flux Core'.

Section – C

03X03 = 09 Marks

Q9. Write advantage of MIG/MAG welding.

Ans. **M.I.G. and M.A.G.S. Advantages**

- 1) Higher welding speeds
- 2) Greater deposition rates
- 3) Less post welding cleaning (e.g. no slag to chip off weld)
- 4) Better weld pool visibility
- 5) No stub end losses or wasted man hours caused by changing electrodes
- 6) Low skill factor required to operate M.I.G / M.A.G.S welding torch
- 7) Positional welding offers no problems when compared to other processes. (Use dip or pulsed mode of transfer)
- 8) The process is easily automated
- 9) No fluxes required in most cases
- 10) Ultra low hydrogen process

Q10. Describe the kind of material transfer in MIG/MAG welding.

Ans. MIG welding has four ways of transferring the wire to the joint.

- Short circuit

- Globular
- Spray
- Pulsed spray

Short circuit transfer is a transfer used when a lower voltage is used for MIG welding. Short circuit transfer occurs when the wire contacts the metal creating short circuits. During this short circuit the wire contacting the metal heats up and melts into the joint by creating a puddle from contact. Then another contact begins and the process keeps repeating many times a second.

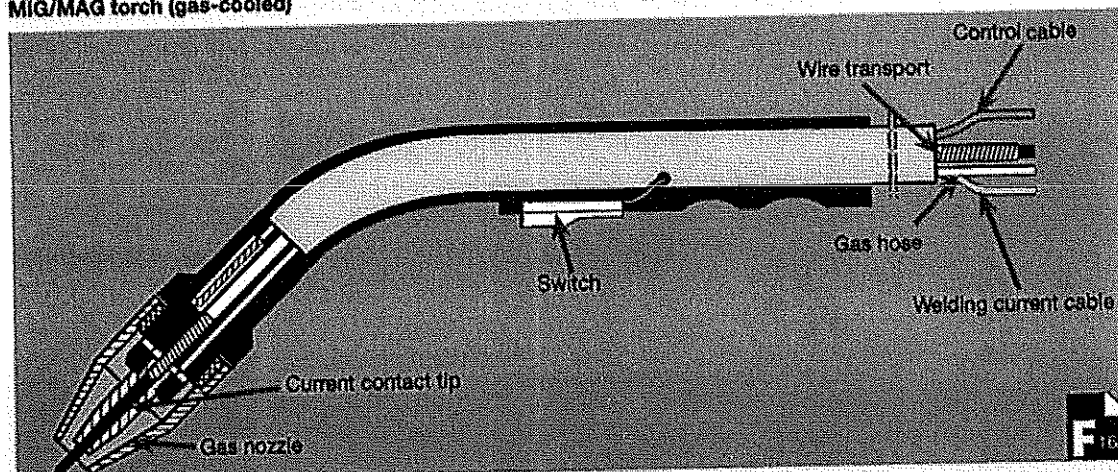
Globular transfer is similar to short circuit transfer. Globular transfer occurs when the wire arcs and it creates a glob that hangs off of the wire. Then the glob falls to the metal filling the joint and then the process begins again

Spray Transfer is a transfer where a higher voltage is applied and the electrode does not contact the metal. The transfer is exactly like it sounds. The wire sprays or has very fine mist transferring to the metal.

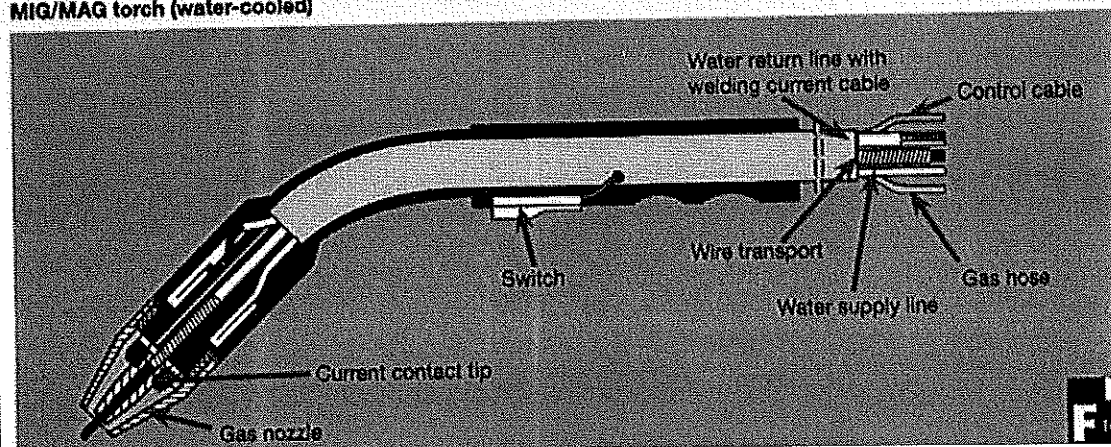
Q11. Draw labelled of MIG/MAG torch and explain two types of cooling.

Ans-

MIG/MAG torch (gas-cooled)



MIG/MAG torch (water-cooled)



Pidminkan
12/09/2021



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.:

School of Metal Construction Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, 1st Semester,
2nd In-Sem. Examination

Course Code: MCS1106

Time: 1 Hour

Course Name: Brazing/Soldering/Oxy-fuel process

Max. Marks: 20

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

Q1. Which of the following is also called "gas welding"?

- a) Oxy fuel gas welding
- b) Metallic welding
- c) Arc welding
- d) Fuel gas welding

Q2. How many types of flames are there in welding?

- a) 1
- b) 2
- c) 3
- d) 4

Q3. In which of the following type of flame, oxygen is of same proportion with acetylene?

- a) Neutral flame
- b) Oxidizing flame
- c) Carburizing flame
- d) both oxidizing flame and carburizing flame

Q4. Which of the following type of flame, oxygen is deficient in proportion with acetylene

- a) Neutral flame



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

- b) Oxidizing flame
- c) Carburizing flame
- d) both oxidizing flame and carburizing flame

Q5. Which of the following flame is harmful to steel?

- a) Neutral flame
- b) Oxidizing flame
- c) Carburizing flame
- d) both oxidizing flame and carburizing flame

Section – B

03X02 = 06 Marks

Q6. Define the oxy-fuel gas welding?

Q7. What are the fuel gases which can be used in oxy-fuel process?

Q8. Write down difference between forehand and backhand welding. (Any two)

Section – C

03X03 = 09 Marks

Q9. Explain the tacking process with example.

Q10. Describe the neutral flame with the help of diagram.

Q11. Explain, how to store acetylene gas in the cylinder?

Rishirajan



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.:

School of Metal Construction Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, 1st Semester,
2nd In-Sem. Examination

Course Code: MCS1106

Time: 1 Hour

Course Name: Brazing/Soldering/Oxy-fuel process

Max. Marks: 20

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

Q1. Which of the following is also called "gas welding"?

- a) Oxy fuel gas welding
- b) Metallic welding
- c) Arc welding
- d) Fuel gas welding

Q2. How many types of flames are there in welding?

- a) 1
- b) 2
- c) 3
- d) 4

Q3. In which of the following type of flame, oxygen is of same proportion with acetylene?

- a) Neutral flame
- b) Oxidizing flame
- c) Carburizing flame
- d) both oxidizing flame and carburizing flame

Q4. Which of the following type of flame, oxygen is deficient in proportion with acetylene

- a) Neutral flame
- b) Oxidizing flame
- c) Carburizing flame
- d) both oxidizing flame and carburizing flame

Q5. Which of the following flame is harmful to steel?

- a) Neutral flame
- b) Oxidizing flame
- c) Carburizing flame
- d) both oxidizing flame and carburizing flame

Q6. Define the oxy-fuel gas welding?

Ans.

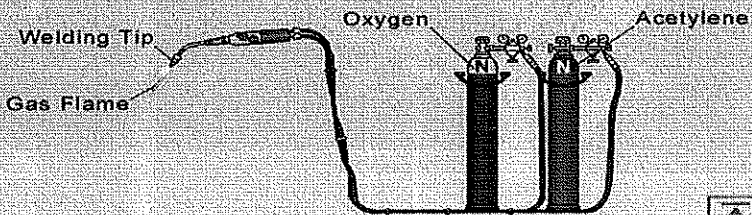
Joining 2

Oxyfuel Gas Welding (OFW) Definition

During oxyfuel gas welding, a gas flame is used to generate the heat needed to melt the materials.

The required temperature of up to 3200 °C is reached by burning a fuel gas (acetylene) with pure oxygen.

The two gases are mixed together in a specific proportion directly in the welding torch, and then ignited just in front of the welding tip.



▲ ◀ ▶ ...

Q7. What are the fuel gases which can be used in oxy-fuel process?

Ans.

1. Acetylene
2. Oxygen
3. Propane
4. Hydrogen
5. Natural gas(Methane)

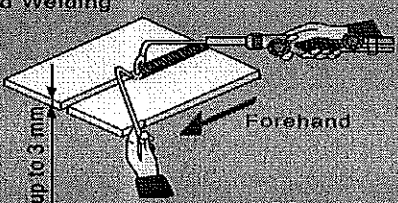
Q8. Write down difference between forehand and backhand welding. (Any two)

Ans.

Joining 2

Oxyfuel Gas Welding (OFW) Execution

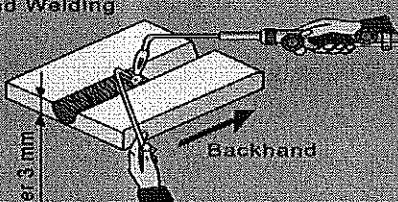
Forehand Welding



up to 3 mm

Forehand

Backhand Welding



over 3 mm

Backhand

Working Technique

Depending on the direction the torch and welding rod are guided, the technique is described as either forehand or backhand welding.

During forehand welding, the joint area is not heated up as much. Therefore, this technique is used with thin sheet metal, up to 3 mm thick.

When the sheet metal is more than 3 mm thick, then the backhand technique is used.

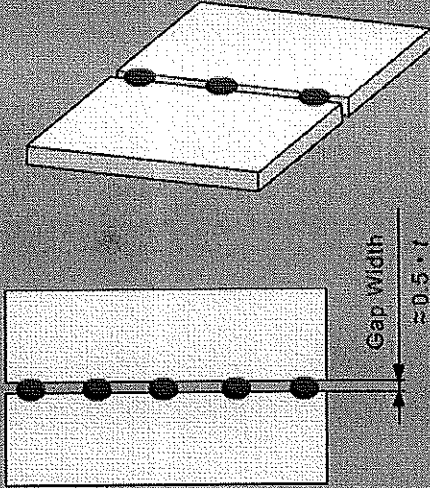
▲ ◀ ▶ ...

Q9. Explain the tacking process with example.

Ans.

Joining 2

Oxyfuel Gas Welding (OFW) Execution



Tacking

To prevent the work pieces from shifting, they are joined together at several places with weld spots.

This procedure is known as tacking.

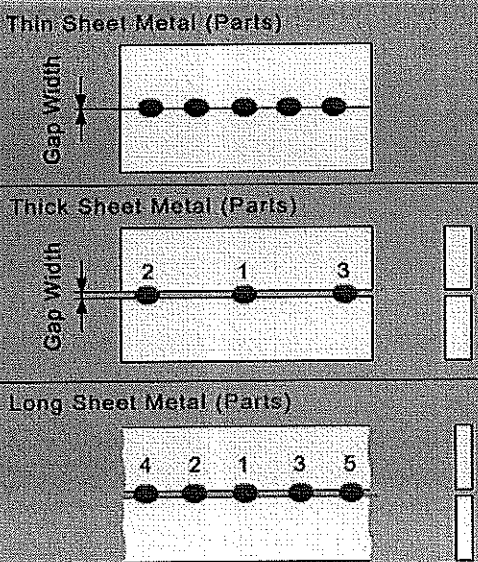
Tacking is performed in several steps:

- Align work pieces with consistent gap width
- Gap width $\approx \frac{\text{Metal thickness}}{2}$
- Clamp work pieces
- Join pieces with weld spots

⏪ ⏩ ...

Joining 2

Oxyfuel Gas Welding (OFW) Execution



Thin Sheet Metal (Parts)

Thick Sheet Metal (Parts)

Long Sheet Metal (Parts)

Examples

The gap width, the tack spacing and the tack order are determined by, among other things, the thickness of the work piece.

Thin sheet metal, less than 1 mm thick, is tacked without a gap.

The tack spacing is small.

Thick pieces of sheet metal are tacked with a gap and a larger tack spacing.

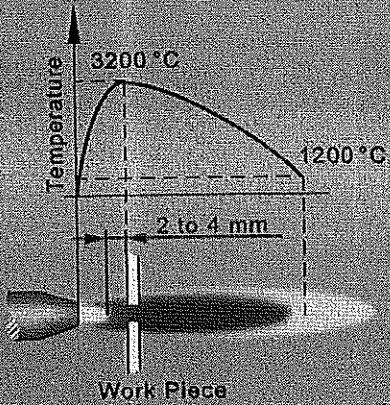
Long pieces of sheet metal are tacked on alternating sides, beginning in the middle.

⏪ ⏩ ...

Q10. Describe the neutral flame with the help of diagram.
 Ans.

Joining 2

Oxyfuel Gas Welding (OFW) Preparation



Work Piece

Neutral Flame

The maximum temperature of 3200 °C is only reached in close proximity to the flame cone.

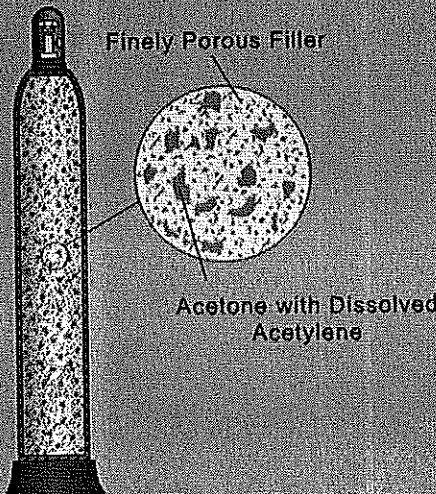
Therefore, as much as possible, you must maintain a constant distance of 2 to 4 mm between the flame cone and the work piece during welding.

▶ ◀ ▶▶

Q11. Explain, how to store acetylene gas in the cylinder?
 Ans.

Joining 2

Oxyfuel Gas Welding (OFW) Welding Gases



Acetone with Dissolved Acetylene

Acetylene

Acetylene explodes when it is compressed to only 2 bars.

Therefore, the maximum allowable pressure for acetylene is only 1.5 bars.

To make it possible, nevertheless, to store larger quantities of acetylene in cylinders, the acetylene is dissolved in a carrier fluid (acetone).

Under pressure, acetone absorbs large quantities of acetylene. The acetylene is released again as the pressure falls during gas withdrawal.

In this way, it is possible to safely charge the cylinders to pressures up to 19 bars.

▶ ◀ ▶▶

Richinika
 12/01/2024

School of Metal Construction Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, I Semester,
2nd In-Sem. Examination

Course Code: MCS1107

Time: 1 Hours

Course Name: Elementary drawing understanding

Max. Marks: 20

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.


Section – A

05X01 = 05 Marks

1. Orthographic projection represents three dimensional objects in
 - a) One dimension
 - b) Two dimension
 - c) Three dimension
 - d) All of above

2. Hatching lines are drawn at ____ degree to reference line
 - a) 30
 - b) 60
 - c) 45
 - d) 90

3. This \parallel is a symbol of
 - a) Parallelism
 - b) Rectangularity
 - c) Symmetry
 - d) Flatness

4.  This symbol shows _____ angle projection.
 - a) 1st angle
 - b) 2nd angle
 - c) 4th angle
 - d) 3rd angle

5. The dotted lines represent.
 - a) Hidden edges
 - b) Center line
 - c) Projection lines
 - d) Hatching lines

Section – B

03X02 = 06 Marks

Q6. What is engineering drawing?

Q7. Explain different kind of lines in drawing

Q8. What are the type of drawing?

Section – C

03X03 = 09 Marks

Q9. What is orthographic projection?

Q10. What are the difference between parallel and perspective projection?

Q11. What are the rules of dimensioning?

P. Srinivasan
12/01/2021



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.:

School of Metal Construction Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, I Semester,
2nd In-Sem. Examination

Course Code: MCS1107

Time: 1 Hours

Course Name: Elementary drawing understanding


Max. Marks: 20

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

1. Orthographic projection represents three dimensional objects in
 - a) One dimension
 - b) **Two dimension**
 - c) Three dimension
 - d) All of above
2. Hatching lines are drawn at ___ degree to reference line
 - a) 30
 - b) 60
 - c) **45**
 - d) 90
3. This \parallel is a symbol of
 - a) **Parallelism**
 - b) Rectangularity
 - c) Symmetry
 - d) Flatness
4.  This symbol shows _____ angle projection.
 - a) **1st angle**
 - b) 2nd angle
 - c) 4th angle
 - d) 3rd angle
5. The dotted lines represent.
 - a) **Hidden edges**
 - b) Center line
 - c) Projection lines
 - d) Hatching lines



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Section – B

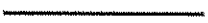


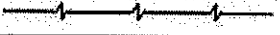



03X02 = 06 Marks

Q6. What is engineering drawing?

Ans: An engineering drawing is a type of technical drawing that is used to convey information about an object. A common use is to specify the geometry necessary for the construction of a component and is called a detail drawing. Usually, a number of drawings are necessary to completely specify even a simple component.

Q7. Explain different kind of lines in drawing

Ans:

Illustration	Application
Thick 	Outlines, visible edges, surface boundaries of objects, margin lines
Continuous thin 	Dimension lines, extension lines, section lines leader or pointer lines, construction lines, boarder lines
Continuous thin wavy 	Short break lines or Irregular boundary lines – drawn freehand
Continuous thin with zig-zag 	Long break lines
Short dashes, gap 1, length 3 mm 	Invisible or interior surfaces
Short dashes 	Center lines, locus lines Alternate long and short dashes in a proportion of 6:1,
Long chain thick at end and thin elsewhere 	Cutting plane lines

Q8. What are the type of drawing?

Ans: There are mainly four type of engineering drawing.

- Component drawing
- General drawing
- Hand sketches
- Exploded drawing

Section – C

03X03 = 09 Marks

Q9. What is orthographic projection?

Ans: orthographic projection is a means of representing three-dimensional objects in two dimensions. It is a form of parallel projection, in which all the projection lines are orthogonal to the projection plane, resulting in every plane of the scene appearing in affine transformation on the viewing surface.

Q10. What are the difference between parallel and perspective projection?

Ans: - Parallel projection: Distance from the observer to the object is infinite projection

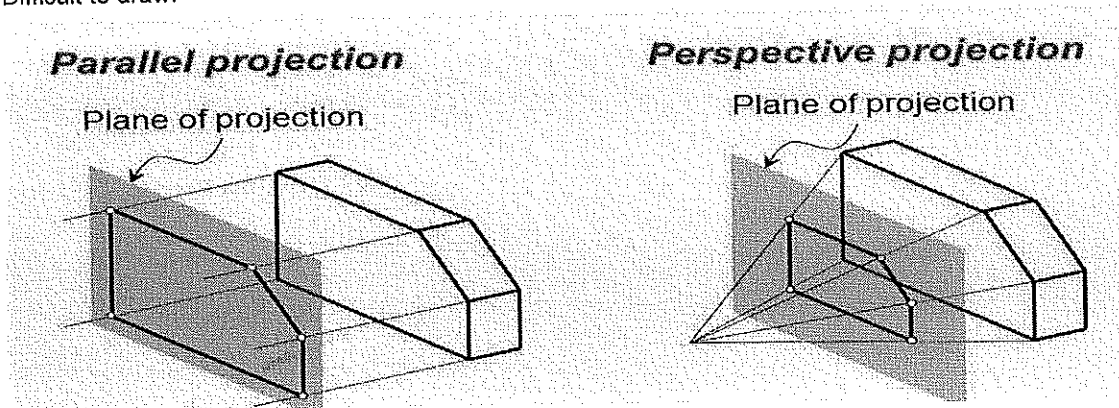
Lines are parallel – object is positioned at infinity.

Less realistic but easier to draw.



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Perspective projection: Distance from the observer to the object is finite and The object is viewed from a single point – projectors are not parallel. Perspective projection mimic what the human eyes see, however they are Difficult to draw.



Q11. What are the rules of dimensioning?

Ans: Rules for Dimensioning a Technical Drawing

1. Each dimension should be given clearly, so that it can be interpreted in only one-way.
2. Dimensions should not be duplicated, or the same information given in two different ways, and no dimensions should be given except those needed to produce or inspect the part.
3. Dimensions should be given between views whenever possible. However, it is sometimes necessary to place a dimension above or below a view.
4. Dimensions should be given so that it will not be necessary for the machinist to calculate, scale, or estimate any dimension.
5. Dimensions should be attached to the view where the shape is best shown. This is most frequently the front view.
6. Dimensions should be placed in the views where features dimensioned are shown true shape. This sometimes means dimensioning an auxiliary view.
7. Avoid dimensioning to hidden lines wherever possible.
8. Dimensions should not be placed upon a view unless clearness is promoted, and long extension lines are avoided.
9. Dimensions applying to two adjacent views should be placed between views, unless clearness will be promoted by placing them outside the view.
10. The longer dimensions should be placed outside all intermediate or shorter dimensions, so that dimension lines will not cross extension lines.
11. In machine drawings, omit all inch marks, except when necessary for clearness; for example, 1" VALVE.
12. A dimension should be attached to only one view: extension lines should not connect two views.
13. Detail dimensions should "line up" in chain fashion.
14. Avoid a complete chain of detail dimensions; better to omit one. Otherwise, add REF (reference) to one detail dimension, or to the overall dimension.
15. Dimension lines should be spaced uniformly throughout the drawing. They should be spaced at least 3/8" from the object, and 1/4" apart.
16. No line of the drawing should be used as a dimension line or coincide with dimension line.
17. Dimension line should never cross other dimension lines.

Richardson
12/01/2024