



Welding Sales Rep Exam Prep

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Practice Questions

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1. What type of metal transfer is characterized by molten metal droplets transferring across the arc at a rate of more than 50 per second in GMAW?

- A. Pulse transfer
- B. Short circuit transfer
- C. Globular transfer
- D. Spray transfer

2. Which of the following GMAW wire electrode sizes would be most appropriate for welding thin-gauge sheet metal?

- A. 1/16 inch (1.6 mm)
- B. 0.045 inch (1.2 mm)
- C. 0.030 inch (0.8 mm)
- D. 3/32 inch (2.4 mm)

3. What is the primary function of the drive rolls in a GMAW wire feeder system?

- A. To create the electrical connection to the wire
- B. To feed the electrode wire at a controlled speed
- C. To regulate shielding gas flow
- D. To prevent wire tangling in the spool

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4. When a customer is welding aluminum using GMAW, which wire feeding system would you most likely recommend?

- A. Push-pull system
- B. Standard push system
- C. Gravity-feed system
- D. Spool-on-gun system only



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5. What shielding gas would be most appropriate to recommend for GMAW on stainless steel to maximize corrosion resistance of the weld?

- A. 90% helium and 10% argon
- B. 100% argon
- C. 75% argon and 25% carbon dioxide
- D. Argon with 1-2% oxygen and 1-5% carbon dioxide

6. In GMAW, to achieve spray transfer mode which is essential for high-speed welding of thick sections, which combination of parameter adjustments is most appropriate?

- A. Lower amperage and increase wire feed speed only
- B. Decrease voltage and use 100 percent CO_2
- C. Increase voltage and amperage with an argon-rich shielding gas mixture
- D. Maintain low voltage with a high helium content gas

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7. When welding thick sections using GMAW, spray transfer is preferred. Which of the following best describes the key metallurgical advantage of spray transfer for such applications?

- A. Reduced heat input and lower deposition rates
- B. High deposition rates and a uniform bead due to rapid droplet transfer
- C. Intermittent arc ignition with increased spatter
- D. Variable arc stability leading to pore formation

8. In gas metal arc welding (GMAW), which combination of process parameter adjustments is most effective in shifting the transfer mode from globular to spray, thereby enhancing weld bead uniformity and deposition rates?

- A. Increase both voltage and wire feed speed
- B. Decrease voltage while increasing wire feed speed
- C. Increase voltage while decreasing wire feed speed
- D. Decrease both voltage and wire feed speed

9. What is the primary distinguishing feature of the Submerged Arc Welding (SAW) process?

- A. It requires no shielding gas
- B. It can only be performed underwater
- C. It uses multiple electrodes simultaneously
- D. The arc is completely submerged under granular flux



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10. Which of the following is a major advantage of Submerged Arc Welding?

- A. Low heat input
- B. Excellent for overhead welding positions
- C. High deposition rates
- D. Minimal equipment investment

11. What is a limitation of the Submerged Arc Welding process?

- A. Cannot weld thick materials
- B. Limited to flat and horizontal positions
- C. Requires special breathing apparatus
- D. Only works with aluminum alloys

12. Which industries commonly use Submerged Arc Welding?

- A. Shipbuilding, pressure vessels, and pipe manufacturing
- B. Aerospace and aircraft maintenance
- C. Automotive body repair
- D. Jewelry and small electronics

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13. What happens to the granular flux during the Submerged Arc Welding process?

- A. It must be completely replaced after each weld
- B. It completely evaporates during welding
- C. It becomes part of the weld metal
- D. Part melts to form protective slag, unused portion can be recovered and reused

14. What type of power source is typically used for Submerged Arc Welding?

- A. Pulsed high-frequency current
- B. Single-phase AC only
- C. DC power (typically constant voltage)
- D. Battery-operated portable units



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15. Which of the following materials is LEAST commonly welded using the SAW process?

- A. Carbon steel
- B. Aluminum
- C. Low alloy steel
- D. Stainless steel

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16. What safety advantage does Submerged Arc Welding offer compared to many other welding processes?

- A. Minimal fumes and no visible arc flash
- B. Lower electrical hazard potential
- C. Reduced fire risk
- D. No hot slag production

17. In multi-wire Submerged Arc Welding systems, what is the advantage of using multiple electrodes?

- A. Elimination of porosity defects
- B. Better penetration in thick materials
- C. Lower overall power consumption
- D. Increased deposition rates and productivity

18. What is the purpose of the flux in Submerged Arc Welding?

- A. Only to slow the cooling rate
- B. Only to prevent spatter
- C. To shield the arc, stabilize the arc, and provide alloying elements
- D. Only to improve arc starting

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19. Which joint preparation is most common for Submerged Arc Welding of thick materials?

- A. Square butt joint only
- B. V-groove or single/double bevel
- C. T-joints only
- D. Lap joints only



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20. What is a key difference between SAW flux and SMAW electrode coating?

- A. SAW flux is supplied separately from the electrode
- B. SAW flux contains no alloying elements
- C. SAW flux cannot be reused
- D. SAW flux produces more smoke

21. What can increase the deposition rate in Submerged Arc Welding?

- A. Decreasing travel speed
- B. Reducing the arc voltage
- C. Using smaller diameter wire
- D. Adding iron powder to the flux

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22. Which of the following is NOT a common form of automation used with SAW?

- A. Gantry systems
- B. Tractor-mounted systems
- C. Handheld operation
- D. Rotating positioners

23. What is a typical wire diameter range used in Submerged Arc Welding?

- A. 0.6mm to 1.2mm
- B. 2.4mm to 6.4mm
- C. 0.8mm to 1.6mm
- D. 8.0mm to 12.0mm

24. What is the primary purpose of the tungsten electrode in GTAW?

- A. To create the arc without being consumed
- B. To provide filler material
- C. To shield the weld pool from oxygen
- D. To increase deposition rates

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25. Which shielding gas is most commonly used in GTAW when welding aluminum?

- A. Nitrogen
- B. Carbon dioxide
- C. Oxygen
- D. Argon

26. What color is typically associated with pure tungsten electrodes?

- A. Yellow
- B. Red
- C. Green
- D. Blue

27. What is a key advantage of GTAW over other welding processes?

- A. Highest deposition rate
- B. Precise control and high-quality welds
- C. Lowest equipment cost
- D. Fastest welding speed

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28. Which of the following materials is GTAW particularly well-suited for welding?

- A. Stainless steel
- B. Cast iron
- C. Heavy structural steel
- D. Recycled scrap metal

29. What type of current is typically used when performing GTAW on aluminum?

- A. Pulsed MIG current
- B. DC straight polarity only
- C. DC reverse polarity only
- D. AC (alternating current)

30. What is the function of the foot pedal in a GTAW setup?

- A. To change shielding gas flow
- B. To adjust wire feed speed
- C. To control amperage during welding
- D. To rotate the workpiece



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Answer Key & Explanations

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1. D — Spray transfer

Spray transfer in GMAW is characterized by tiny molten droplets transferring at high rates (more than 50 per second). This transfer mode requires higher voltage and amperage settings and typically uses argon-rich shielding gas mixtures.

2. C — 0.030 inch (0.8 mm)

0.030 inch (0.8 mm) diameter wire is typically recommended for thin-gauge sheet metal applications in GMAW. The smaller diameter provides better control and less heat input for thin materials.

3. B — To feed the electrode wire at a controlled speed

The primary function of drive rolls in a GMAW wire feeder system is to push or pull the electrode wire at a consistent speed to ensure stable arc characteristics and uniform weld deposition.

4. A — Push-pull system

For aluminum GMAW applications, a push-pull wire feeding system is typically recommended because it provides consistent feeding of the soft aluminum wire while preventing bird-nesting and feeding problems common with standard systems.

5. D — Argon with 1-2% oxygen and 1-5% carbon dioxide

A tri-mix of argon with 1-2% oxygen and 1-5% carbon dioxide provides the best combination of arc stability and corrosion resistance for stainless steel GMAW applications. The minimal CO_2 and O_2 content limits chromium oxidation while maintaining good arc characteristics.

6. C — Increase voltage and amperage with an argon-rich shielding gas mixture

Spray transfer mode requires higher voltage and amperage settings combined with an argon-rich shielding gas to ensure stable arc characteristics and optimal weld quality.

7. B — High deposition rates and a uniform bead due to rapid droplet transfer

Spray transfer mode provides high deposition rates and consistent bead appearance, leading to improved weld quality on thick sections.

8. A — Increase both voltage and wire feed speed

Spray transfer in GMAW requires both higher voltage and an increased wire feed speed. Increasing voltage expands the arc and supports a rapid droplet transfer, while an increased wire feed speed maintains a consistent droplet supply, collectively stabilizing the spray mode and improving weld quality.

9. D — The arc is completely submerged under granular flux

In Submerged Arc Welding, the welding arc is completely submerged under a layer of granular flux, which is what distinguishes it from other arc welding processes.

10. C — High deposition rates

SAW is known for its very high deposition rates compared to other welding processes, making it ideal for



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high-production applications.

11. B — Limited to flat and horizontal positions

SAW is primarily limited to flat and horizontal welding positions due to the nature of the granular flux, which would fall away in vertical or overhead positions.

12. A — Shipbuilding, pressure vessels, and pipe manufacturing

SAW is widely used in shipbuilding, structural steel, pressure vessel manufacturing, and pipe mills due to its high deposition rates and deep penetration.

13. D — Part melts to form protective slag, unused portion can be recovered and reused

During SAW, part of the flux melts to form a slag that protects the weld pool, while the rest can be recovered and reused, making the process economical.

14. C — DC power (typically constant voltage)

SAW typically uses DC power with either electrode positive or negative polarity, although AC can also be used for certain applications.

15. B — Aluminum

While SAW is excellent for carbon steels, low alloy steels, and stainless steels, it is not commonly used for aluminum due to oxide issues and flux incompatibility.

16. A — Minimal fumes and no visible arc flash

Since the arc is completely covered by flux, SAW produces minimal fumes and no visible arc flash, reducing respiratory and eye hazards.

17. D — Increased deposition rates and productivity

Multi-wire SAW systems increase productivity by dramatically increasing deposition rates while maintaining weld quality.

18. C — To shield the arc, stabilize the arc, and provide alloying elements

The flux in SAW serves multiple purposes: it shields the weld pool from atmospheric contamination, stabilizes the arc, adds alloying elements, and forms protective slag.

19. B — V-groove or single/double bevel

V-groove and single/double bevel preparations are most common for SAW of thick materials as they allow for proper penetration while minimizing filler metal requirements.

20. A — SAW flux is supplied separately from the electrode

SAW flux is supplied separately from the electrode wire, unlike SMAW where the flux coating is on the electrode itself.

21. D — Adding iron powder to the flux

Adding iron powder to the flux can significantly increase deposition rates in SAW by providing additional filler material.

22. C — Handheld operation

While SAW is commonly automated with tractors, gantries, or robotic systems, handheld operation is not typical due to the nature of the process and its flux delivery system.



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23. B — 2.4mm to 6.4mm

SAW typically uses wire diameters from 2.4mm (3/32") to 6.4mm (1/4"), which are larger than those used in many other welding processes.

24. A — To create the arc without being consumed

In Gas Tungsten Arc Welding, the tungsten electrode is non-consumable and used only to create the arc, not to provide filler material.

25. D — Argon

Argon is the most common shielding gas for GTAW aluminum welding due to its excellent arc stability and cleaning action.

26. C — Green

Pure tungsten electrodes are typically identified by their green color coding on the tip.

27. B — Precise control and high-quality welds

GTAW provides exceptional control and precision, allowing for high-quality welds on thin materials and in critical applications.

28. A — Stainless steel

GTAW is especially well-suited for welding stainless steel due to its ability to produce clean, precise welds without flux.

29. D — AC (alternating current)

AC (alternating current) is typically used for aluminum GTAW welding because it provides cleaning action to remove the oxide layer.

30. C — To control amperage during welding

The foot pedal in GTAW allows the welder to control the amperage during welding, providing precise control over heat input.



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