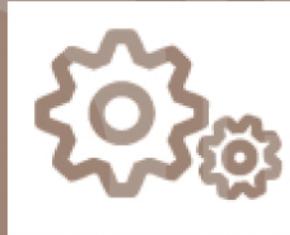


Experienced Worker Assessment Blueprint

Welding



Specific Competencies and Skills Tested in this Assessment:

Thermal Cutting Processes

- Cut and form metal with oxyfuel equipment
- Cut materials with arc cutting processes

Basic Heat Treat

- Examine metals visually for identification

Terms/Symbols/Blueprints

- Read and interpret blueprints and sketches
- Read/understand welding symbols

Inspection/Testing Methods

- Clean ferrous and nonferrous metals mechanically and/or chemically for welding
- Prepare plate/pipe for welding
- Use hand tools (hacksaw, files, chisels) to prepare materials
- Use power equipment to wirebrush, buff, sand, drill, grind cut or punch metal
- Set up for welding groove and fillet welds
- Test metals using guided bend tester
- Test metals using tensile testing machine
- Understand/comprehend welding procedures
- Joint design



Components

- Identify electrodes/wires
- Electrode (SMAW) selection

Safety

- Perform all shop tasks to industrial safety standards

Power Source Principles

- Perform routine maintenance on welding and shop equipment
- Check wiring, controls, and battery
- Service starters: manual, recoil, battery, and alternating current
- Electric arc physics

Specific Competencies and Skills continued:

Oxyfuel Welding and Brazing

- Assemble and disassemble oxyfuel portable equipment
- Assemble and disassemble oxyfuel stationary equipment
- Handle and store compressed gas cylinders
- Perform leak test on oxyfuel equipment with approved testing medium
- Set up for welding in the flat, horizontal, vertical and overhead positions
- Adjust parameters and weld ferrous materials with the OFW process
- Braze ferrous and nonferrous materials with TB process
- Set up for welding, brazing, or soldering pipe/tubing joints

Shielded Metal Arc Welding

- Set up for welding in the flat, horizontal, vertical, and overhead positions
- Assemble and disassemble SMAW equipment
- Adjust parameters and weld ferrous materials with the SMAW process



Gas Metal Arc Welding and Flux Cored Arc Welding

- Set up for welding in the flat, horizontal, vertical and overhead positions
- Assemble and disassemble GTAW equipment
- Adjust parameters and weld ferrous materials with GTAW process
- Adjust parameters and weld nonferrous materials with the GTAW process

Gas Tungsten/Arc Measuring Instruments

- Use standard measuring and layout tools

Welding Qualifications and Procedures

- Verification of preheat temperatures

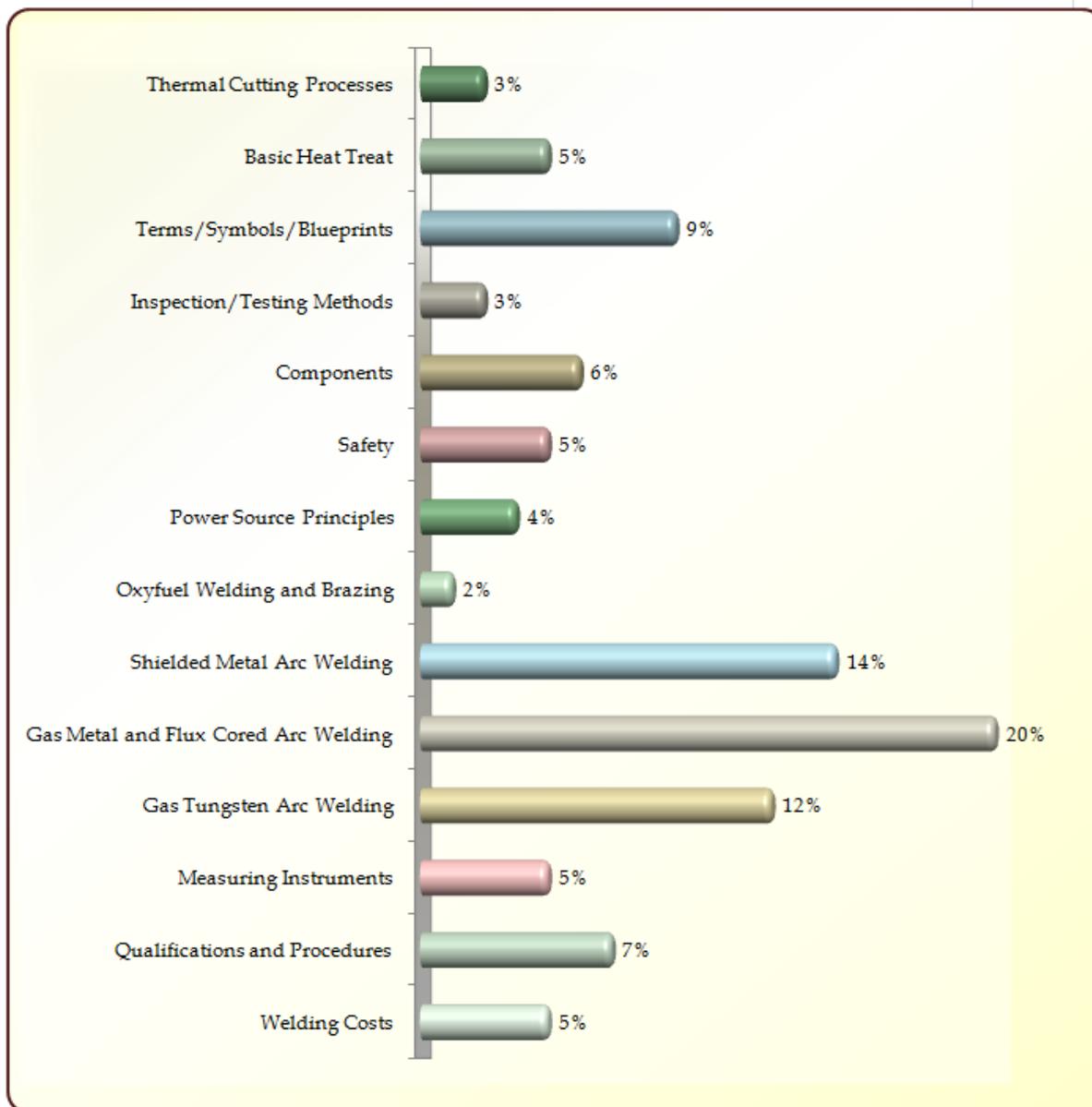
Welding Costs

Written Assessment:

Administration Time: 3 hours

Number of Questions: 184

Areas Covered:



Sample Questions:

Tensile strength is the resistance a metal has to being

- A. bent
- B. compressed
- C. pulled apart
- D. twisted

Which of the following weld test methods would be most useful in detecting internal defects?

- A. dye penetrant
- B. visual
- C. ultrasonic
- D. magnetic particle

For GMAW - MIG of aluminum and stainless steel, the recommended type welding current is

- A. alternating current high frequency
- B. direct current reverse polarity
- C. direct current straight polarity
- D. direct current straight polarity high frequency

Inert gas is kept flowing after the welding arc is broken in order to

- A. shield the ceramic cup
- B. purge the torch lines of argon
- C. shield the tungsten and the work from contamination
- D. keep the flow meter from freezing up

As a rule, to control cost, speed of construction, and quality of weld, you should

- A. use a 1/4-inch electrode for vertical fillet welds
- B. use direct current whenever possible
- C. weld in the flat position whenever possible
- D. do all of the above

Performance Assessment:

Administration Time: 6 hours

Number of Jobs: 10

Areas Covered:

12% Single V Groove with Backing Strip – Test Position 3G

Equipment set-up, material alignment and fit up, following directions, safety, appearance, undercut, overlap, surface porosity, melt-thru of backing, complete joint penetration and root face bend.

12% Single V Groove Pipe Weld – Test Position 5G

Equipment set-up, material alignment and fit up, following directions, safety, appearance, undercut, overlap, surface porosity, melt-thru, undercut, overlap, complete joint penetration and root face bend.

10% Silver Brazing Stainless Steel– Test Position Horizontal (2F)

Equipment set-up, material alignment and fit up, following directions, safety, complete flow through, leg size of fillet, length of fillet and finished appearance.

10% T-Joint Fillet Weld – Test Position 2F

Equipment set-up, material alignment and fit up, following directions, safety, appearance, undercut, overlap, surface porosity, fillet weld break test and penetration.

11% Single V Groove Pipe Weld – Test Position 5G

Equipment set-up, material alignment and fit up, following directions, safety, surface porosity, appearance, undercut, overlap, complete joint penetration, root face bend, and melt-thru.

10% T-Joint Fillet Weld on Aluminum – Test Position 3F Vup

Equipment set-up, material alignment and fit up, following directions, safety, surface porosity, appearance, melt-thru, undercut, overlap and fillet weld break test.

10% T-Joint Fillet Weld on Stainless Steel – Test Position 2F

Equipment set-up, material alignment and fit up, following directions, safety, surface porosity, melt-thru, undercut, overlap and appearance.

8% Lap Joint Fillet Weld – Test Position 2F

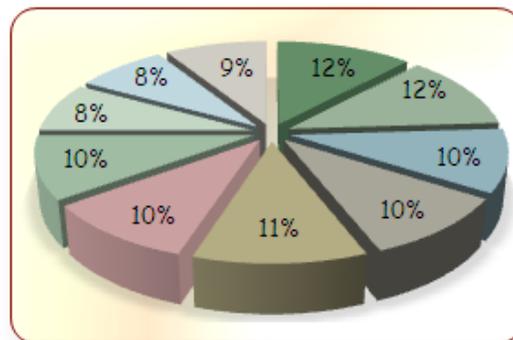
Equipment set-up, material alignment and fit up, following directions, safety, surface porosity, melt-thru, undercut, overlap and appearance.

8% Weld Bead Removal by Air Carbon Arc Gouging

Equipment set-up, following directions, safety, complete bead removal, finished appearance, width of gouge and slag removal.

9% Oxyfuel Cutting with Cutting Torch

Equipment set-up, finished parts conform to print, following directions, safety, cut tolerance and appearance of cut.



Sample Job: Single V Groove with Backing Strip - Test Position 3G
Welding Process: Shielded Metal Arc Welding (SMAW)

Estimated Job Time: 50 minutes

Participant Activity: The participant is to weld the root pass throughout the entire joint length using the vertical-up direction. Participant should not tack weld on back of test plate. Remaining weld layers are to be made so that a portion of each layer remains visible to the evaluator for inspection upon completion of the job. The cap pass MUST be a minimum of 4" long to allow for two bend test specimens to be cut from this section.

