

General Assessment Information

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Test Type: The Welding industry-based credential is included in NOCTI's Job Ready assessment battery. Job Ready assessments measure technical skills at the occupational level and include items which gauge factual and theoretical knowledge. Job Ready assessments typically offer both a written and performance component and can be used at the secondary and post-secondary levels. Job Ready assessments can be delivered in an online or paper/pencil format.

Revision Team: The assessment content is based on input from secondary, post-secondary, and business/industry representatives from the states of Kansas, Michigan, North Carolina, Pennsylvania, and Virginia.



48.0508-
Welding Technology/Welder



Career Cluster 13 -
Manufacturing



51-4121.06- Welders, Cutters,
and Welder Fitters

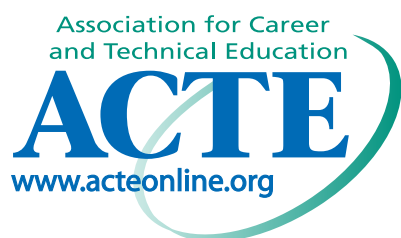


NATIONAL COLLEGE CREDIT RECOMMENDATION SERVICE
University of the State of New York - Regents Research Fund

In the lower division
baccalaureate/associate degree
category, 3 semester hours in Welding
Technology or Mechanical Technology.

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General Assessment Information (continued)



The Association for Career and Technical Education (ACTE), the leading professional organization for career and technical educators, commends all students who participate in career and technical education programs and choose to validate their educational attainment through rigorous technical assessments. In taking this assessment you demonstrate to your school, your parents and guardians, your future employers and yourself that you understand the concepts and knowledge needed to succeed in the workplace. Good Luck!



INTERNATIONAL SIGN ASSOCIATION

www.signs.org

The International Sign Association (ISA) represents manufacturers, suppliers and users of on-premise signs and sign products from all 50 states and around the globe. The sign and visual communications industry is a \$37.5 billion business that employs more than 200,000 individuals. One of ISA's long term goals is to showcase and promote the many exciting and diverse career opportunities that exist within the sign and visual communications industry and to apprise students of the abundant employment opportunities that are present to skilled and qualified candidates. ISA strongly encourages and supports students that work to enhance their educational achievements by completing NOCTI assessments.

Written Assessment

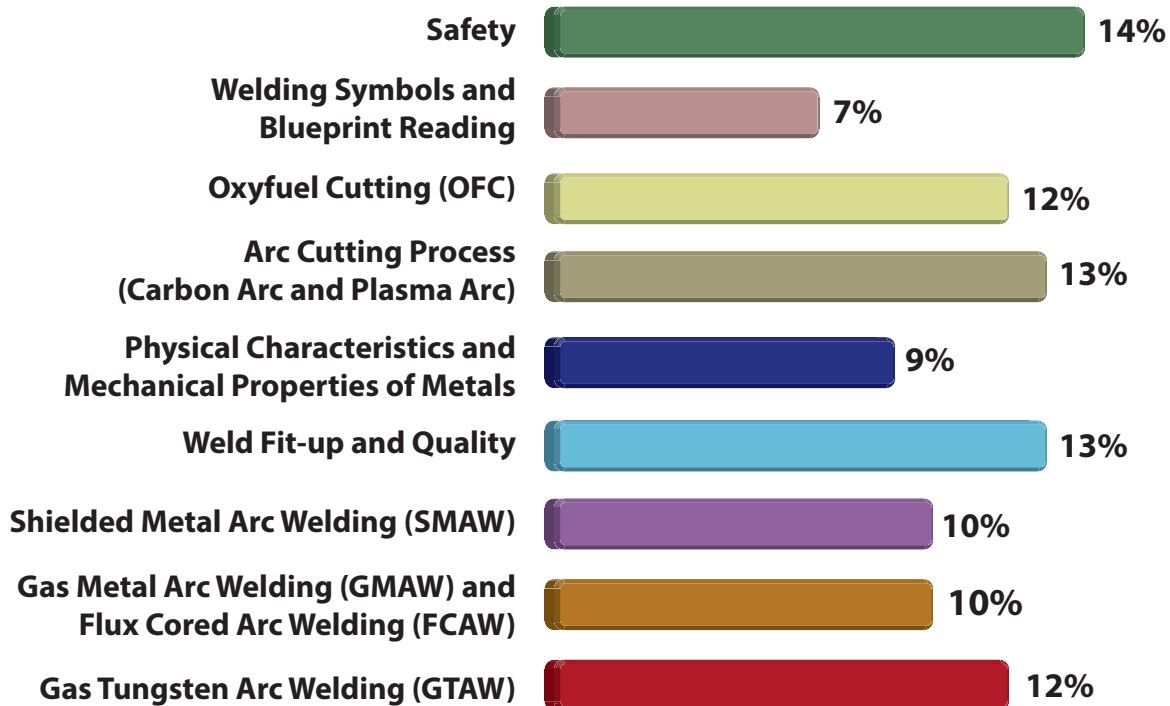
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours

Number of Questions: 162

Number of Sessions: This assessment may be administered in one, two, or three sessions.

Areas Covered



Specific Standards and Competencies Included in this Assessment

Safety

- Identify various welding hazards and safe practices
- Display familiarity with industrial and OSHA safety standards
- Demonstrate knowledge of oxyfuel safety procedures
- Demonstrate knowledge of arc welding and cutting safety procedures
- Demonstrate proper and safe use of PPE, hand tools, and power equipment

Welding Symbols and Blueprint Reading

- Interpret weld and welding symbols
- Read and interpret blueprints and sketches

Oxyfuel Cutting (OFC)

- Identify oxyfuel cutting principles
- Identify and maintain oxyfuel equipment
- Assemble and disassemble oxyfuel equipment
- Handle and store compressed gas cylinders
- Cut and form metal with oxyfuel equipment



Arc Cutting Process (Carbon Arc and Plasma Arc)

- Identify arc cutting process principles
- Assemble and disassemble arc cutting equipment
- Identify and maintain arc cutting equipment
- Exhibit an understanding of arc cutting consumables
- Demonstrate appropriate use of arc cutting equipment

Physical Characteristics and Mechanical Properties of Metals

- Identify metals by physical characteristics and shapes
- Explain the pre-heating and post-heating processes
- Exhibit understanding of distortion control methods
- Identify basic mechanical properties of metals

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Please note, due to a shift in OSHA terminology, that any references to "Material Safety Data Sheets (MSDS)" will be changed to "Safety Data Sheets (SDS)" during the next scheduled revision.

Specific Standards and Competencies (continued)

Weld Fit-Up and Quality

- Identify various joint designs (joint geometry) and welding positions
- Clean and prepare materials for groove and fillet welds
- Identify welding defects and/or discontinuities
- Test welds using various techniques
- Use standard measuring and layout tools (metric and English)
- Describe welding industry codes, standards, and procedures

Shielded Metal Arc Welding (SMAW)

- Explain principles of SMAW
- Set up and maintain SMAW equipment
- Demonstrate selection and application of SMAW consumables
- Perform fillet and groove welds on plate in all positions

Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW)

- Explain principles of GMAW and FCAW
- Set up and maintain GMAW and FCAW equipment
- Demonstrate selection and application of GMAW and FCAW consumables
- Perform fillet and groove welds on plate in all positions

Gas Tungsten Arc Welding (GTAW)

- Explain principles of GTAW
- Set up and maintain GTAW equipment
- Demonstrate selection and application of GTAW consumables
- Perform fillet and groove welds on ferrous and nonferrous metals in all positions

Sample Questions

Before cutting or welding, a container should be

- A. burned out
- B. steam cleaned
- C. filled with flux
- D. filled with oxygen

When a cutting attachment is added to a welding torch body, the oxygen valve on the torch body is opened

- A. one complete turn
- B. half way
- C. completely
- D. two and one-half turns

What is the most common reason for post-weld heat treatment?

- A. normalizing
- B. tempering
- C. stress relieving
- D. annealing

The number 70 of an E-7018 electrode indicates the electrode's

- A. tensile strength
- B. position
- C. type of coating
- D. polarity

In GTAW of aluminum and magnesium, the current supply recommended for best results is

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

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Sample Questions (continued)

Information contained in the tail of a welding symbol might include

- A. specifications
- B. pitch
- C. field weld
- D. size of weld

Which current setup is used for plasma arc cutting?

- A. AC
- B. ACHF
- C. DCEN
- D. DCEP

The members of a fillet weld will join at approximately

- A. 30 degrees
- B. 45 degrees
- C. 60 degrees
- D. 90 degrees

The _____ electrode is commonly used with the FCAW process.

- A. ER705-3
- B. E7018
- C. E70T-1
- D. F7X-EM12K

The major difference between FCAW and GMAW is the

- A. polarity
- B. power source
- C. electrode
- D. wire feeder

Performance Assessment

NOCTI performance assessments allow individuals to demonstrate their acquired skills by completing actual jobs using the tools, materials, machines, and equipment related to the technical area.

Administration Time: 2 hours and 40 minutes

Number of Jobs: 5

Areas Covered:

33% Oxyfuel Cutting

Participants will select and set up equipment correctly and safely, lay out the project according to the provided diagram, and cut to specified dimensions.

15% SMAW V-Groove, 3G

Participants will select and set up equipment correctly and safely, fit and tack the assembly on a bench, weld material according to specifications, and perform a visual inspection.

16% GMAW Tee Joint, 2F

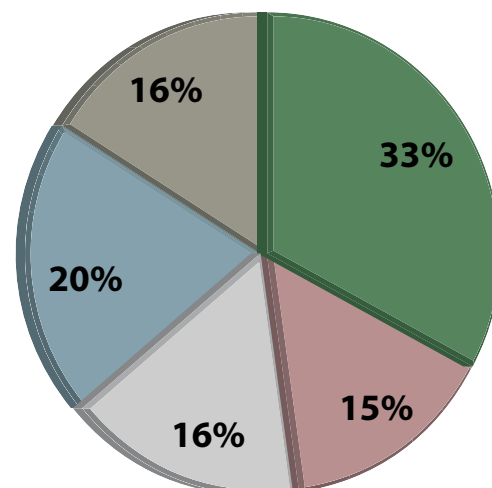
Participants will select and set up materials correctly and safely, weld material according to specifications, and perform a visual inspection.

20% Aluminum GTAW Tee Joint, 2F

Participants will select and set up equipment correctly and safely, clean material as necessary, determine appropriate shielding gas flow rate, weld according to specifications, and then perform a visual inspection.

16% Stainless Steel GTAW Lap Joint, 2F

Participants will set up equipment correctly and safely, select the correct type and diameter of tungsten, fit and tack material appropriately, weld according to specifications, and perform a visual inspection.



Sample Job

Aluminum GTAW Tee Joint, 2F

Maximum Time: 20 minutes

Participant Activity: The participant will use two pieces of sheet aluminum and filler rod to weld a Tee-joint in the horizontal position.



Notes

