



## Job Ready Assessment Blueprint

# Agriculture Mechanics



Test Code: 2102 / Version: 01

**“Measuring What Matters”**

## Specific Competencies and Skills Tested in this Assessment:

### Safety

- Demonstrate positive safety attitudes and responsibilities
- Demonstrate knowledge of basic emergency procedures
- Demonstrate knowledge of equipment safety systems and consumer liability issues associated with them
- Demonstrate structural and environmental safety

### Welding and Mechanics

- Exhibit knowledge and proficiency of shielded metal arc welding (SMAW) procedures
- Exhibit knowledge and proficiency of gas metal arc welding (GMAW) procedures
- Exhibit knowledge and proficiency of gas cutting and welding procedures
- Exhibit knowledge and proficiency of plastic welding procedures
- Exhibit knowledge of milling machines, lathes, grinders, and saws



### Power and Machinery

- Exhibit knowledge and proficiency of fluid power system
- Exhibit knowledge and proficiency of engine system
- Exhibit knowledge and proficiency of electrical system
- Exhibit knowledge and proficiency of power train system
- Service and maintain machines and equipment
- Identify and analyze machines and equipment components
- Troubleshoot and diagnose machines and equipment
- Disassemble and reassemble machines and equipment, test operation, and make adjustments as necessary

## ***Specific Competencies and Skills continued:***

### **Electrical Power and Process**

- Solve problems to determine voltage, amperage, resistances, and wattages
- Exhibit knowledge and show proficiency with use of a voltmeter, ohmmeter, ammeter, or wattmeter
- Exhibit knowledge and proficiency of structural wiring
- Disassemble, clean, and reassemble electric motors

### **Agricultural Structures**

- Exhibit knowledge and proficiency of plumbing procedures
- Demonstrate knowledge of framing process and identify appropriate building materials
- Calculate board feet and cost of materials
- Demonstrate knowledge of concrete structures
- Read and interpret blueprints and plans
- Demonstrate knowledge of roofing systems
- Demonstrate knowledge of ventilation systems

### **Agribusiness**

- Complete a bill of materials
- Determine cost of a project
- Accurately record and interpret nameplate information
- Calculate cost of operating equipment
- Establish and maintain effective business strategies and interpersonal communication skills
- Calculate, maintain, and analyze accurate business records
- Display knowledge of basic information management skills



***Specific Competencies and Skills continued:***

**Environmental and Natural Resource Systems**

- Set up and adjust field survey equipment
- Calculate, measure, maintain, and analyze data from field survey
- Complete differential or profile leveling problem
- Read and interpret maps including property, township, zoning, and topographical maps
- Demonstrate familiarity with national environmental agencies such as Natural Resource Conservation Service (NRCS), Environmental Protection Agency (EPA), or Department of Environmental Quality (DEQ)

**Careers in Agriculture Mechanics**

- Examine career opportunities in the agriculture power and systems technologies
- Identify advanced training or post secondary education needed for careers in agriculture power and systems technologies
- Demonstrate knowledge of personal characteristics important to specific occupations in power and systems technologies

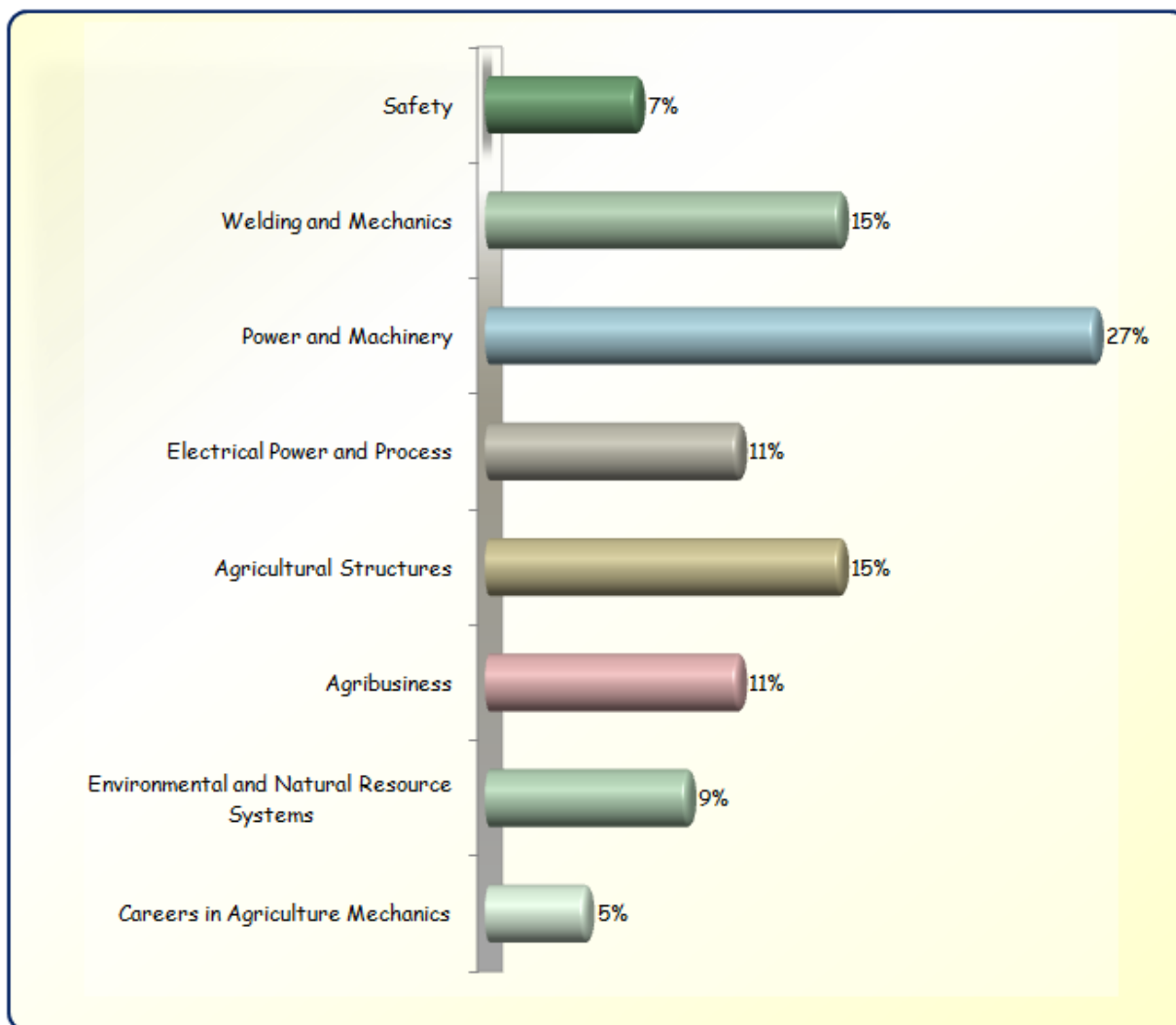


### Written Assessment:

Administration Time: 3 hours

Number of Questions: 183

### Areas Covered:



**Sample Questions:**

Some electric motors are designed with built-in capacitors because the capacitor

- A. gives additional starting torque even though it requires additional amperage
- B. helps maintain running efficiency after the motor reaches operating speed
- C. provides the motor with extra power when the load is increased
- D. allows the operator to set the speed of the motor



A short weld used for temporarily holding metal in place is called a \_\_\_\_\_ weld.

- A. spacer
- B. temporary fusion
- C. tack
- D. temporary braze

The control device used to regulate engine speed is referred to as the

- A. carburetor
- B. governor
- C. throttle
- D. intake valve

A square of building material will cover

- A. 10 square feet
- B. 25 square feet
- C. 50 square feet
- D. 100 square feet

A rod reading taken on a point of known elevation is

- A. backsight
- B. line of sight
- C. foresight
- D. hindsight

## Performance Assessment:

**Administration Time:** 3 hours

**Number of Jobs:** 6

### Areas Covered:

**22% Horizontal Square Groove Butt Weld - SMAW**

Safety, select correct electrodes, attach the ground clamp, set amperage correctly, set the gap, tack, position metal, and quality of bead.

**19% Oxyacetylene Cutting**

Safety, adjust regulators, light and adjust flame, cutting, and product evaluation.

**20% Troubleshoot and Diagnose a Gas Engine**

Safety, engine model number, compression reading, gap measurement, spark intensity, determination of engine performance, and explanation.

**12% Install a Switch to Control a Light**

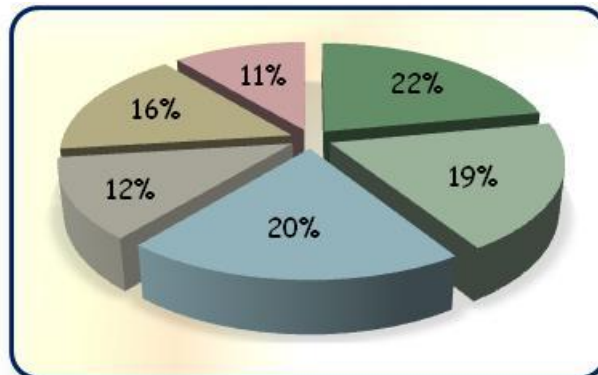
Safety, circuit grounded, boxes grounded, attach wires to switch terminals, and light switch controlled.

**16% Mark a Common Rafter**

Safety, correct measurements, upper plumb cut, lower plumb cut, and bird's mouth cut.

**11% Set-up and Instrument Leveling of the Farm Level**

Care of instruments and equipment, set up and leveling of instrument, and rod reading.



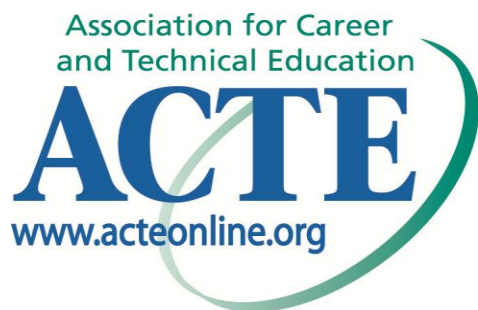
**Sample Job:** Set-up and Instrument Leveling of the Farm Level

**Maximum Time:** 30 minutes

**Participant Activity:** The participant will be required to set up and level the instrument and take a rod reading on a road at a predetermined fixed location.



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!