

Job Ready Assessment Blueprint

Agriculture Mechanics



Test Code: 2102 / Version: 01

Copyright 2007

General Assessment Information

Blueprint Contents

General Assessment Information	Sample Written Items
Written Assessment Information	Performance Assessment Information
Specific Competencies Covered in the Test	Sample Performance Job

Test Type: The Agriculture Mechanics assessment 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 Idaho, Minnesota, New York, and Pennsylvania.



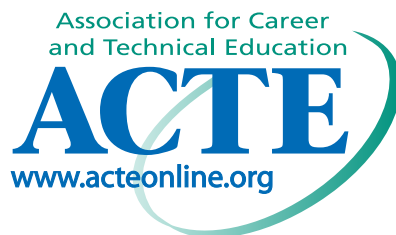
01.0201- Agriculture
Mechanization, General



Career Cluster 1- Agriculture,
Food and Natural Resources



49-3041.00- Farm Equipment
Mechanics and Service Technicians



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!



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
Agricultural Mechanics or
Agricultural Maintenance

Written Assessment

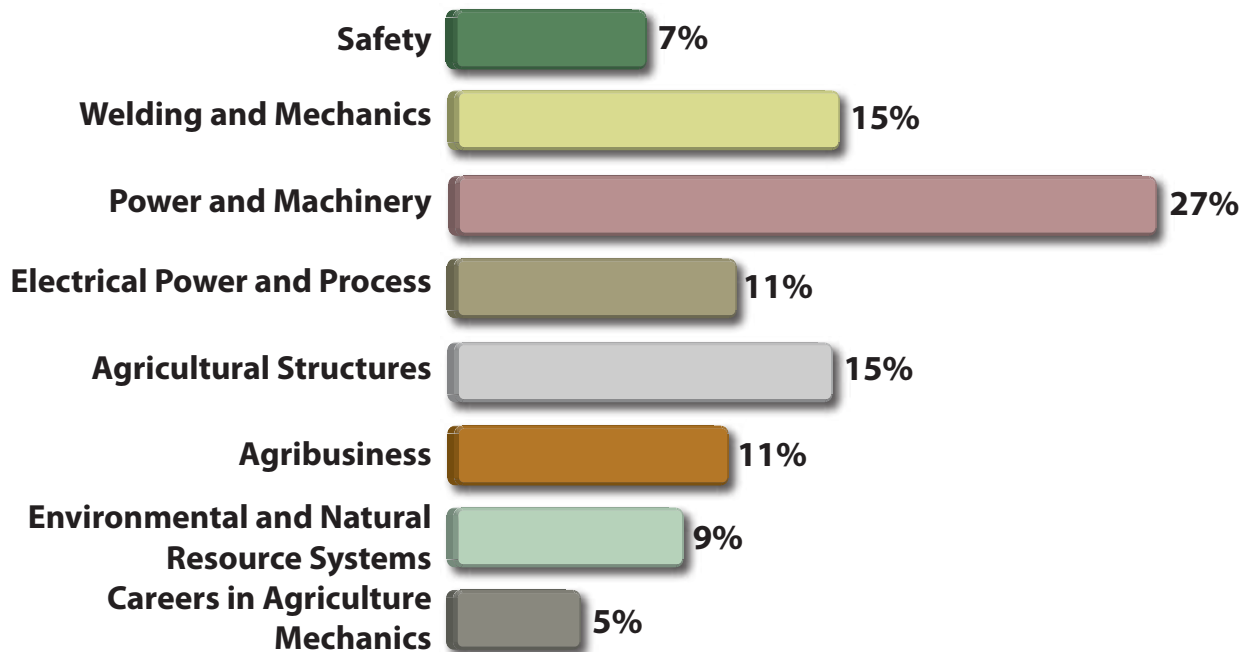
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours

Number of Questions: 183

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

Areas Covered



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



(Continued on the following page)

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

(Continued on the following page)

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

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

(Continued on the following page)

Sample Questions (continued)

Nails used for molding and cabinet work are known as _____ nails.

- A. box
- B. finishing
- C. duplex
- D. common

Any metal containing iron, such as mild steel or stainless steel, is called

- A. nonferrous
- B. ferrous
- C. metallic
- D. an alloy

A device capable of utilizing a sensing signal to open and close a circuit is called a

- A. resistor
- B. commutator
- C. motor control
- D. relay

Two common types of remote sensing used in agricultural machinery are

- A. GPS and GIS
- B. GPS and RAS
- C. GIS and RAS
- D. SPG and SIG

Which one of these career choices will require at least a bachelor's degree?

- A. machine operator
- B. agricultural engineer
- C. equipment/parts manager
- D. heavy equipment maintenance technician

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: 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, quality of bead, and time to complete Job 1.

19% Oxyacetylene Cutting

Safety, adjust regulators, light and adjust flame, cutting, product evaluation, and time to complete Job 2.

20% Troubleshoot and Diagnose a Gas Engine

Safety, engine model number, compression reading, gap measurement, spark intensity, determination of engine performance, explanation, and time to complete Job 3.

12% Install a Switch to Control a Light

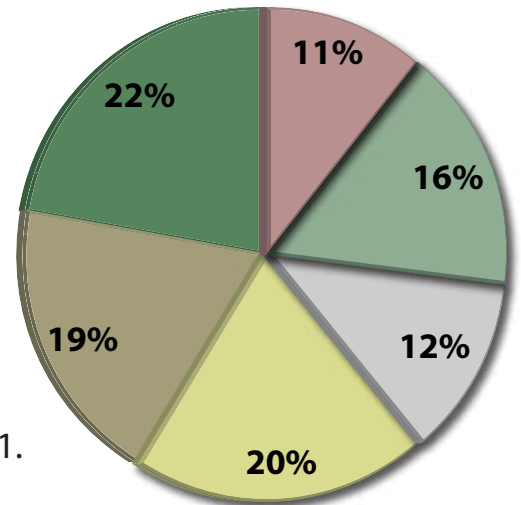
Safety, circuit grounded, boxes grounded, attach wires to switch terminals, light switch controlled, and time to complete Job 4.

16% Mark a Common Rafter

Safety, correct measurements, upper plumb cut, lower plumb cut, bird's mouth cut, and time to complete Job 5.

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

Care of instruments and equipment, set-up and leveling of instrument, rod reading, and time to complete Job 6.



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.

