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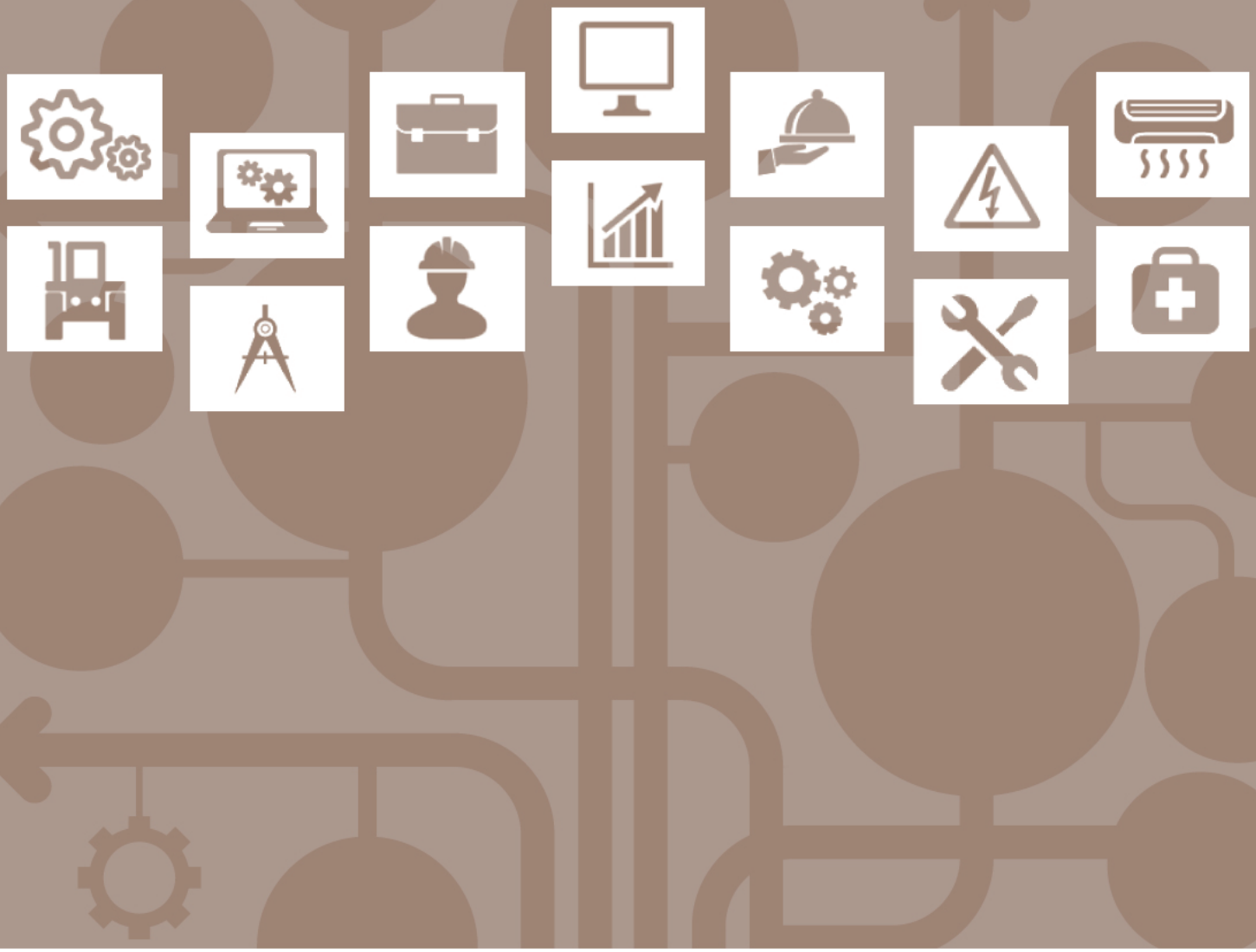
Entry Level Assessment Blueprint

Agriculture Mechanics



Test Code: 2102 / Version: 01

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

Electrical Power and Process

- Solve problems to determine voltage, amperage, resistance, and wattage
- 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

Specific Competencies and Skills continued:

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

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)

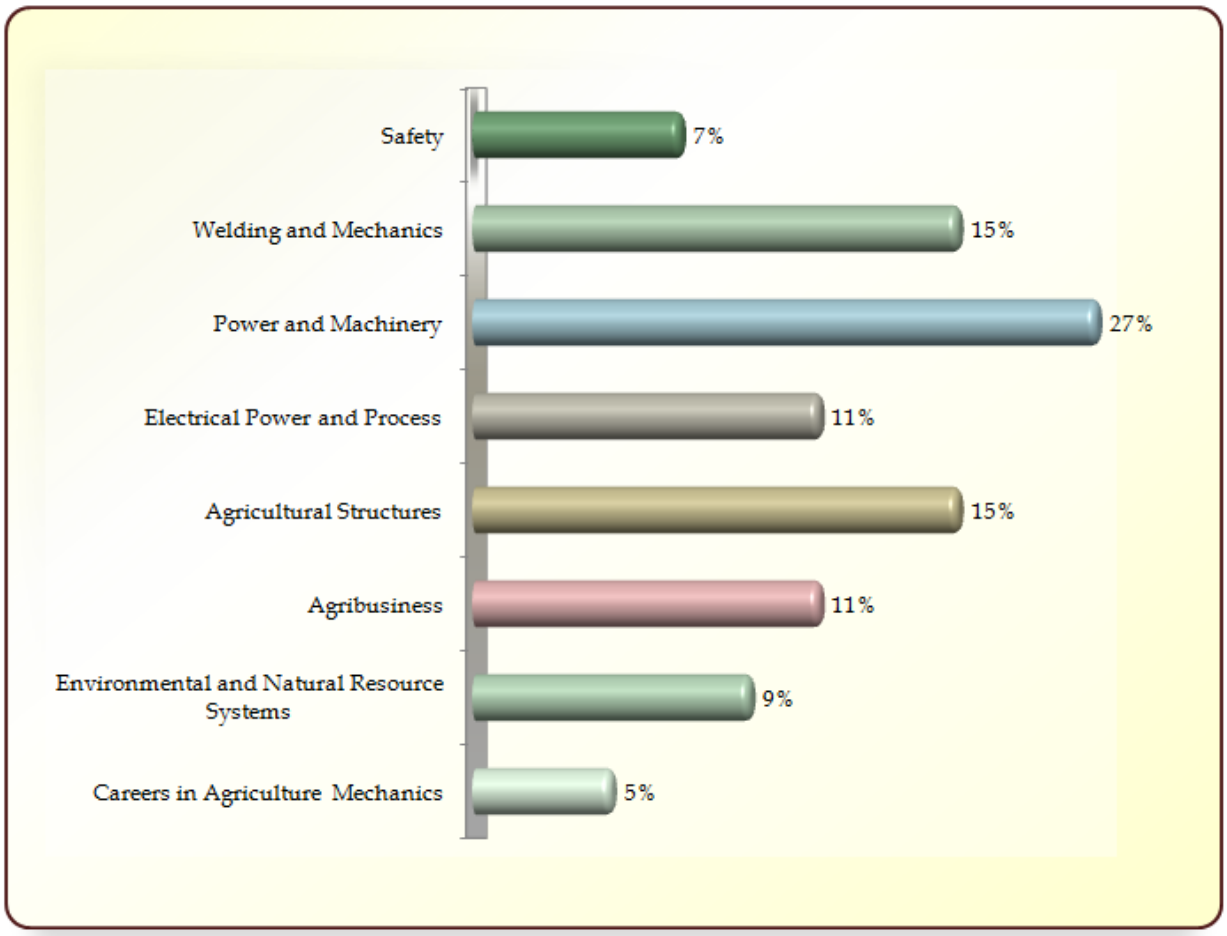
Careers in Agriculture Mechanics

- 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.

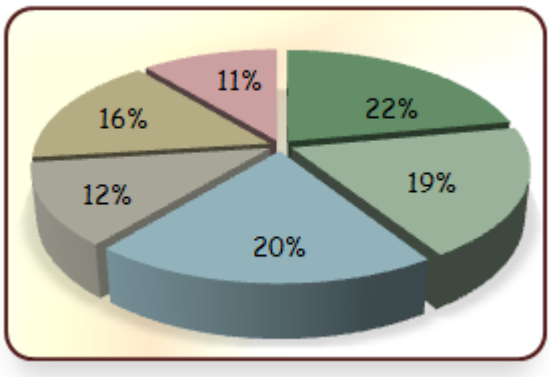
19% **Oxyacetylene Cutting**
Safety, adjust regulators, light and adjust flame, cutting, and product evaluation.

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 set up and level the instrument and take a rod reading on a road at a predetermined fixed location.