PRODUCTION AGRICULTURE - PILOT

Test Code: 3163
Version: 01

Specific Competencies and Skills Tested in this Assessment:

**Animal Science**
- Maintain animal health
- Explain grading and selection
- Describe handling and shipment of live animals
- Explain genetics and breeding systems (e.g., artificial insemination, embryo transfer)
- Describe nutritional needs of animals
- Describe beef production operations; compare breeds and types
- Describe dairy operations; compare breeds and types
- Describe poultry operations; compare breeds and types
- Describe horse operations; compare breeds and types
- Describe aquaculture operations; compare breeds and types
- Describe alternative livestock operations (e.g., rabbits, llamas, alpacas); compare breeds and types
- Describe swine operations; compare breeds and types
- Describe sheep and goat operations; compare breeds and types

**Conservation and Sustainable Natural Resources**
- Explain water, land, air, wildlife, and soil resources
- Manage and recycle waste products
- Evaluate new, renewable energy sources, including biofuels

**Plant Science**
- Describe plant anatomy and physiology
- Describe taxonomy and plant identification
- Explain plant genetics, breeding, and propagation
- Safely mix, handle, and apply agricultural chemicals
- Identify plant pests and practice pest control
- Identify and classify plant diseases
- Calculate fertilizer rates and costs
- Determine plant populations and planting rates
- Discuss harvesting and storage of crops
- Identify plant nutrient requirements
Production Agriculture - PILOT (continued)

Soil Management
Describe preparation of land for efficient cropping
Exhibit knowledge of land judging and soil management concepts
Interpret soil survey information
Interpret soil test results and implement various amendments

Agricultural Technology
Explain safe use and maintenance of hand and power tools
Perform calculations and measurements used in agricultural technology
Perform basic welding, electrical, plumbing, and carpentry practices
Explain construction and maintenance of agricultural and livestock containment structures
Operate, maintain, and service small engines
Safely operate, maintain, and repair agricultural equipment

Agribusiness
Identify sources of credit
Use appropriate tax management skills
Describe types of farm businesses and enterprises, including cooperatives
Identify assets, liabilities, and net worth
Calculate net worth, income and expenses, and cash flow statements
Identify fixed and variable costs
Compute market values of livestock and costs of ownership
Interpret and apply analysis of financial tools and recordkeeping systems
Determine factors of risk management
Identify marketing and distribution networks, channels, and processes
Identify agricultural-based sales and marketing skills
Identify principles of agribusiness economics, including supply and demand
Describe career opportunities and advancement pathways
Production Agriculture - PILOT (continued)

Written Assessment:

Administration Time: 3 hours
Number of Questions: 202

Areas covered:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Area</th>
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<tbody>
<tr>
<td>30%</td>
<td>Animal Science</td>
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<tr>
<td>6%</td>
<td>Conservation and Sustainable Natural Resources</td>
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<tr>
<td>21%</td>
<td>Plant Science</td>
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<td>7%</td>
<td>Soil Management</td>
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<td>14%</td>
<td>Agricultural Technology</td>
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<tr>
<td>22%</td>
<td>Agribusiness</td>
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Sample Questions:

An injection placed in the vein is called
A. subcutaneous
B. intramuscular
C. intravenous
D. intraperitoneal

Biodiesel is an alternative fuel usually made from animal fats or
A. biomass
B. simple sugars
C. vegetable oils
D. starches

An example of a plant that is classified as a legume is
A. corn
B. rye
C. soybean
D. wheat

Calcium carbonate/lime added to the soil
A. changes the soil temperature
B. does not change the pH
C. lowers the pH
D. raises the pH

Combustion in a two-cycle engine occurs ______ every cycle.
A. once
B. twice
C. three times
D. four times
Owned assets pledged to secure a loan are called
A. equity
B. collateral
C. credit
D. depreciation

Which breed produces the highest volume of milk?
A. Holstein
B. Jersey
C. Brown Swiss
D. Guernsey

When fertilizer is described as 10-6-4, the "10" refers to which component?
A. phosphorus
B. potassium
C. nitrogen
D. sulfur

When growing crops by no-till planting, use a
A. specially designed planter for seeding and fertilizer applications
B. specially designed tractor that can be used only for no-till planting
C. soil finisher and a mould-board plow
D. mould-board plow and tractor

When selecting a wrench, a/an _____ end has the most secure fit to the nut or bolt.
A. open
B. box
C. claw
D. hook
Performance Assessment:

Administration Time: 2 hours and 50 minutes
Number of Jobs: 5

Areas Covered:

22% **Vehicle Maintenance**
Participant will record vehicle make and model, check oil, record fuel reading, record recommended and actual tire inflation psi, check engine coolant level, complete vehicle maintenance worksheet, and return work area to original condition.

28% **Calculate Net Worth**
Participant will identify and list current assets, intermediate assets, long term assets, total assets, current liabilities, absence of intermediate liabilities, long term liabilities, net worth, total liabilities and capital, and current capital ratio.

15% **Determine Genotypes and Phenotypes (Punnett Square)**
Participant will complete a Punnett Square, identify four phenotypes, and list six genotypes and the number of each.

12% **Soil Test Interpretation**
Participant will complete a worksheet by using the soil test report provided.

23% **Administer an Injection**
Participant will determine medication, dosages, appropriate syringe and needle size, then prepare the syringe and injection site and administer the injection and dispose of the needle and syringe.

Sample Job: Soil Test Interpretation

Maximum Job Time: 30 minutes

Participant Activity: Participant will use the soil test report provided to answer questions on the provided worksheet.