



## ***CUSTOMIZED ASSESSMENT BLUEPRINT***

### **POWER, STRUCTURAL, AND TECHNICAL SYSTEMS**

**Test Code: 8991**

**Version: 01**

**Preliminary Blueprint - final version is subject to slight changes.**

#### **Specific competencies and skills tested in this assessment:**

##### **Foundations of Agriculture, Food, and Natural Resources**

Demonstrate understanding of agribusiness (e.g., SAE, expenses)  
Demonstrate understanding of animal systems (e.g., breeds of livestock, anatomy)  
Demonstrate understanding of agriculture innovation and technology  
Demonstrate understanding of food products and processing (e.g., protein sources, food preservation)  
Demonstrate understanding of natural resources (e.g., renewable resources)  
Demonstrate understanding of plant systems (e.g., plant parts, processes, soil)  
Demonstrate understanding of power, structural, and technical systems (e.g., measurement)  
Demonstrate knowledge of leadership development through FFA (e.g., motto, parliamentary procedure, official dress)

##### **Measurement and Calculation**

Determine and interpret measurements (e.g., read micrometer, measuring tape)  
Discuss and perform basic math (e.g., calculate linear feet, percentage, cubic yards; convert feet to inches, fractions to decimals)  
Calculate units of weight, volume, and temperature

##### **Foundational Carpentry**

Identify tools (e.g., tool care, tool identification)  
Discuss safety (e.g., power tool safety, welding PPE, Safety Data Sheets)

##### **Foundational Plumbing**

Describe the plumbing process (e.g., preparing plumbing joints)  
Describe plumbing with copper and plastic (e.g., types of plastic pipes, joining pipes)  
Identify fixtures used for agricultural plumbing (e.g., flux, types of fittings)

*Power, Structural, and Technical Systems (continued)*

**Foundational Electrical Wiring**

Discuss basic electricity (e.g., grounding, wire selection)

Identify the units of measurement used to measure electricity (e.g., electric meters, measuring units for electricity, electrical tests)

Describe how to install breakers, switches, and sockets (e.g., electrical connections, circuit breakers, electrical safety)

**SMAW and MIG Welding, Oxyfuel Cutting, and Brazing**

Identify types of welding joints (e.g., types of welds)

Discuss welding methods (e.g., shielding gas, check values, brazing, welder components)

Describe welder set-up and process (e.g., lighting a torch, reading a pressure gauge, electrode selection, welding arc)

***Power, Structural, and Technical Systems (continued)***

**Knowledge-Based Assessment:**

Administration Time: 2 hours

Number of Questions: 112

***Areas covered:***

36%	Foundations of Agriculture, Food, and Natural Resources
16%	Measurement and Calculation
14%	Foundational Carpentry
10%	Foundational Plumbing
9%	Foundational Electrical Wiring
15%	SMAW and MIG Welding, Oxyfuel Cutting and Brazing

***Sample Questions:***

Agricultural innovations have allowed farmers to

- A. eliminate the use of chemical fertilizers
- B. increase the use of chemical fertilizers
- C. produce more crops on less land
- D. produce fewer crops on more land

FFA business meetings are run using an established set of rules known as

- A. Business Rules
- B. Meeting Rules
- C. Parliamentary Procedures
- D. Business Procedures

When making a cut, the space left in the line of the cut is called the

- A. drag
- B. rip
- C. lag
- D. kerf

Operating and safety switches are generally wired in

- A. series
- B. parallel
- C. series parallel
- D. vertical

What is an example of a shielding gas?

- A. argon
- B. nitrous oxide
- C. oxygen
- D. mapp gas