

Blueprints



Job Ready Assessment Blueprint

Test Code: 2150 / Version: 01

Wind Turbine Maintenance Technician

**Enhancing today's workforce
through tailored performance solutions**

Specific Competencies and Skills Tested in this Assessment:

Safety

- Follow OSHA safety procedures for tower rescue for specific types of towers (tower rescue, fall arrest, personal protection and rigging)
- NFPA 70-e for workplace electrical safety (arc flash)
- Identify safety hazards at a wind park (mechanical safety, static electricity, where NOT to work)
- Identify weather hazards including wind, lightning, ice, rain, etc.
- Know when to wear appropriate personal protective safety equipment (climbing gear, hard hat, gloves, safety glasses, and steel-toed shoes, etc.)
- Properly use hand and power tools
- Properly handle, store, monitor and dispose of hazardous materials and substances
- Explain use of lock-out/tag-out practices and devices used by wind farm technicians



Equipment Operation

- Describe and identify parts of wind turbine site and plant
- Perform rigging and proper use of crane signals to lift equipment

Electrical and Mechanical Systems

- Basic knowledge of electricity (AC/DC, Ohm's Law, 3-phase)
- Apply principles of basic fluid power and gear and hydraulic systems
- Describe the impact of heat generation on wind turbine equipment and materials
- Repair electrical (circuits) equipment
- Use computerized diagnostic to diagnose networks, resonance, phasors, capacitive and inductive, and circuit analysis
- Apply knowledge of transformers

Specific Competencies and Skills continued:

Electrical and Mechanical Systems continued:

- Interpret electrical and hydraulic (pitch system) schematics pertaining to different components of wind turbines
- Describe computerized control systems and power conversion units
- Use specialized tools (such as a multimeter and megohmmeter) for troubleshooting electrical circuits, motors, and generators
- Repair hydraulic and mechanical equipment
- Describe basic programmable logic controllers and understand the type of equipment run by PLC
- Describe SCADA and server systems



Hand Tools

- Apply working knowledge of all types of drills
- Identify and use nitrogen checking and filling kit
- Identify and use wrenches (including Allen, torque)
- Apply working knowledge of pneumatic tools
- Apply working knowledge of hydraulic tools
- Use basic hand tools (screwdrivers, pliers, wire cutters, wire strippers, wrenches)
- Apply hotwork principles

Maintain Equipment

- Maintain hand and power tools
- Perform torque checks on bolts using torque wrenches
- Change oil filters and grease bearings
- Describe types and specifications of fasteners and lubricants
- Describe operation of the different types of pumps
- Describe laser and mechanical alignment
- Perform equipment inspection

Specific Competencies and Skills continued:

Computational, Technical, and Writing Skills

- Perform technical calculations
- Write field reports
- Describe data transfer
- Describe and apply team skills
- Obtain information from a technical manual

Introduction to Careers in Wind Technology

- Identify careers in wind technology
- Describe entry level requirements for a wind turbine technician

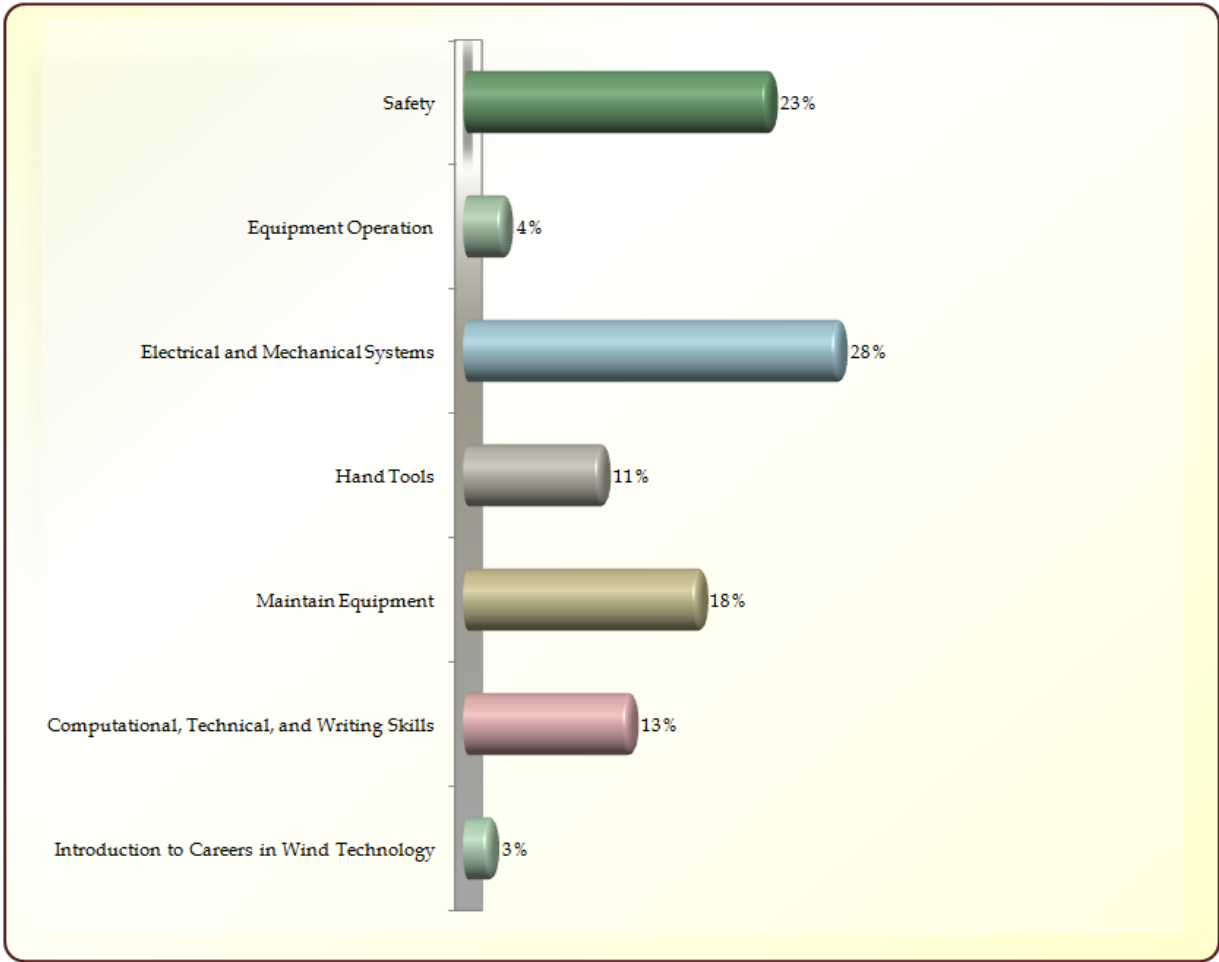


Written Assessment:

Administration Time: 3 hours

Number of Questions: 164

Areas Covered:



Sample Questions:

Personal fall protection gear should be inspected

- A. once a month
- B. every 3 months
- C. every 6 months
- D. every time it is used

Hand signals when a crane is hoisting a load are made by the

- A. apprentice technician
- B. rigger
- C. crane operator
- D. engineer

In Ohm's Law, the letter I stands for

- A. amps
- B. volts
- C. ohms
- D. watts

Pneumatic tools require lubrication

- A. before each use
- B. after 40 hours of operation
- C. twice the manufacturer's recommendation
- D. according to manufacturer's instructions

Which bolt has higher tensile strength?

- A. grade 2
- B. grade 3
- C. grade 5
- D. grade 8

Performance Assessment:**Administration Time:** 2 hours**Number of Jobs:** 5**Areas Covered:****21% Identification of Safety Equipment**

Identify climbing equipment, time to complete Job 1A, retired equipment scale, retired rationale scale, and time to complete Job 1B.

33% Demonstration of Safety Equipment and Climbing Technique

Assemble and put on equipment, harness adjustment proper on all points, necessary lanyards attached properly, time to complete Job 2A, climb technique, use of anchor points, egress technique, and time to complete Job 2B.

21% Connect a Start-Stop Switch to a Contactor and Start a Motor

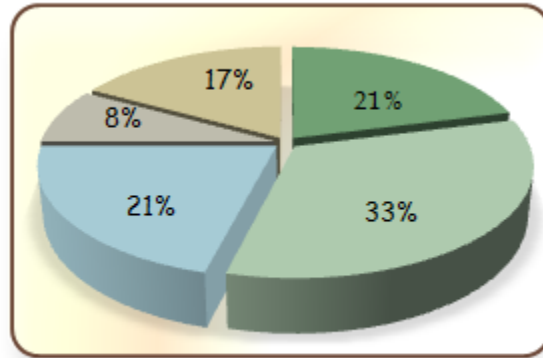
Start-stop switch is wired properly, start and stop motor, disconnect and check power, reverse motor, and time to complete Job 3.

8% Identification of Hand Tools and Fasteners

Identification of hand tools and fasteners, and time to complete Job 4.

17% Torque Testing

Locate spec for torque by using technical manual, scale and criteria for torque testing, check torque, and time to complete Job 5.



Sample Job: Identification of Hand Tools and Fasteners

Maximum Time: 15 minutes

Participant Activity: The participant will identify each numbered hand tool or fastener and write the name of the part next to the corresponding number.

