Specific competencies and skills tested in this assessment:

**Orientation**
Demonstrate safety in the drafting room
Demonstrate professionalism

**Introduction to Drafting and Design**
Demonstrate use of basic board drafting tools and equipment
Demonstrate the use of tools, scales, and equipment to produce a drawing
Demonstrate basic uses of scales
Demonstrate skill in using English and Metric system of measurement

**Geometric Construction**
Draw to scale
Draw geometric figures using basic manual drafting principles
Create drawings using geometric construction principles

**Lettering**
Identify and select a letter style appropriate for architectural drawings
Create letters and numbers in single stroke capital letters (Gothic)

**Freehand Drawing and Sketching**
Identify and sketch the alphabet of lines
Sketch orthographic views
Sketch an isometric drawing
Explain the importance of freehand sketching
Create neat freehand notes and dimensions on a technical sketch
Express an idea using the sketching process

**Introduction to Engineering Math**
Use basic math operations to demonstrate scaling techniques
Use basic applied mathematics to solve engineering problems
Construct lines on a CAD system using relative, absolute, and polar coordinate systems
Establish the relationship among points, lines, and planes in 3-D space
Drafting and Design Technology PA (continued)

**Introduction to Mechanical Drawing and Design**
- Identify and draw necessary orthographic views
- Explain the relationship of orthographic projection to multiview drawing
- Demonstrate knowledge of third angle projection
- Identify and draw auxiliary views
- Identify and draw section views
- Identify and draw threads and fasteners
- Identify and produce a BOM (parts list) for an assembly
- Create a title block on a mechanical drawing

**Dimensioning**
- Apply measurements, notes, and symbols to a technical drawing
- Apply ANSI Standards for dimensions, tolerances, and notes
- Apply ISO Standards for dimensions and notes
- Specify dimension tolerances using symbols and notes

**Introduction to Architecture**
- Read and interpret blueprints
- Construct a floor plan
- Construct an elevation
- Construct a typical wall section
- Draw a pictorial view
- Prepare an architectural drawing to include foundation, framing, concrete, roofing, utility, etc.

**Introduction to Civil Drafting**
- Construct a site plan
- Demonstrate knowledge of a landscaping plan
- Read and interpret a deed

**Introduction to Electrical and Electronic Drafting**
- Identify and describe various symbols
- Create a schematic wiring diagram

**Using Computer Assisted Drafting (CAD)**
- Utilize input and output devices such as printers, plotters, etc.
- Use drawing aids and controls
- Use drawing and editing tools
- Use viewing tools
- Utilize a commercially built drafting library
- Produce a custom built drafting library
- Make a revision to an existing drawing
- Configure and use dimensions and tolerances
- Create 3-dimensional drawings and models
- Create surface models
- Create parametric solid models
- Demonstrate rendering
- Demonstrate importing, exporting, and linking of drawings
- Understand management and storage of files
- Demonstrate knowledge of rapid prototyping
Written Assessment:

Administration Time: 3 hours
Number of Questions: 195

Areas Covered:

- 2% Orientation
- 5% Introduction to Drafting and Design
- 4% Geometric Construction
- 3% Lettering
- 4% Freehand Drawing and Sketching
- 10% Introduction to Engineering Math
- 15% Introduction to Mechanical Drawing and Design
- 13% Dimensioning
- 14% Introduction to Architecture
- 3% Introduction to Civil Drafting
- 2% Introduction to Electrical and Electronic Drafting
- 25% Using Computer Assisted Drafting (CAD)

Sample Questions:

How many millimeters are in an inch?
A. 25.4
B. 39.4
C. 46.5
D. 83.3

A 2-inch diameter circle with an origin fixed at 0,0,0 will have a point on the arc located at
A. -1,2
B. 0,1
C. 0,3
D. 2,3

On a 3/4-10 UNC-2B hexagonal nut, the 3/4 represents the
A. width across the flats
B. nominal size of the thread
C. height of the head
D. distance across the corners

A detail on a drawing labeled with the abbreviation NTS indicates
A. not tolerance specific
B. not to scale
C. national thread segments
D. no treated surfaces

Standard paper roll sizes for common large format plotters include
A. 8-1/2 inch and 7 inch
B. 17 inch and 11 inch
C. 24 inch and 18 inch
D. 36 inch and 22 inch
**Drafting and Design Technology PA (continued)**

**Performance Assessment:**

Administration Time: 2 hours and 55 minutes  
Number of Jobs: 5

**Areas Covered:**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td><strong>Part Dimensioning</strong></td>
<td>Was the GD&amp;T leader created correctly, placement of dimensions, dimension style, and title block is correct and drawing is plotted.</td>
</tr>
<tr>
<td>20%</td>
<td><strong>Section View</strong></td>
<td>Solution, section pattern, line quality, and title block is correct and drawing is plotted.</td>
</tr>
<tr>
<td>15%</td>
<td><strong>Auxiliary View</strong></td>
<td>Ellipse, inclined surface, line quality, and title block is correct and drawing is plotted.</td>
</tr>
<tr>
<td>33%</td>
<td><strong>Kitchen/Bath Floor Plan</strong></td>
<td>Sheet size setup, building structure, kitchen and bath layout, line work, dimension, notes, and title block is included and drawing is plotted.</td>
</tr>
<tr>
<td>12%</td>
<td><strong>Create a 3-D Solid Model</strong></td>
<td>Model, mass properties, and isometric view.</td>
</tr>
</tbody>
</table>

**Sample Job:**  
Part Dimensioning

**Maximum Job Time:** 20 minutes

**Participant Activity:** Participant will open a .dxf file with drawing, dimension part according to ANSI standards, dimensions should be at a precision of three decimal places, add participant ID to title block, save work, plot the file at 1:1 on a size A sheet, and submit completed job to evaluator.