



Job Ready Assessment Blueprint

Industrial Maintenance Mechanics



Test Code: 2074 / Version: 01

“Measuring What Matters”

Specific Competencies and Skills Tested in this Assessment:

Machinery and Equipment

- Disassemble, repair, and reassemble machinery/equipment
- Maintain operating condition and perform preventive maintenance of the machinery/equipment
- Identify and troubleshoot component defects and malfunctions
- Test operation of newly repaired machinery/equipment
- Analyze test results, machine error messages, and information from operators in order to diagnose machinery/equipment problems
- Maintain record of repairs and maintenance performed

Tools and Safety

- Select and differentiate appropriate use of various hand tools
- Demonstrate appropriate care of hand tools
- Identify and safely use large machine tools, including lathes, mills, hoists, rigging equipment, and presses
- Identify safe use of ladders and scaffolding
- Demonstrate understanding of lock-out/tag-out procedures
- Exhibit understanding of shop safety



Specific Competencies and Skills Continued:

Electronics and Electrical Principles

- Apply basic electrical principles
- Demonstrate knowledge of basic CNC operations
- Demonstrate knowledge of basic programmable logic controllers (PLCs)
- Exhibit basic knowledge of electrical symbols



Hydraulics and Pneumatics

- Interpret basic hydraulic and pneumatic symbols
- Apply knowledge of hydraulic and pneumatic components
- Interpret hydraulic and pneumatic principles

Motors and Motor Controls

- Apply basic electrical principles of motors
- Interpret appropriate applications for types of motors (linear, servo, AC induction, DC motors, and transformers)
- Select appropriate applications for frequency drives
- Identify motor components

Mechanism Drives

- Apply principles of mechanisms
- Identify appropriate applications of various gears and drives
- Demonstrate knowledge of appropriate set-up procedures
- Apply principles of mechanics

Industrial Robotics Systems

- Interpret appropriate industrial robotic functions and applications
- Interpret basic robotic programming, including CADD
- Identify various industrial robotic design features



Blueprints and Schematics

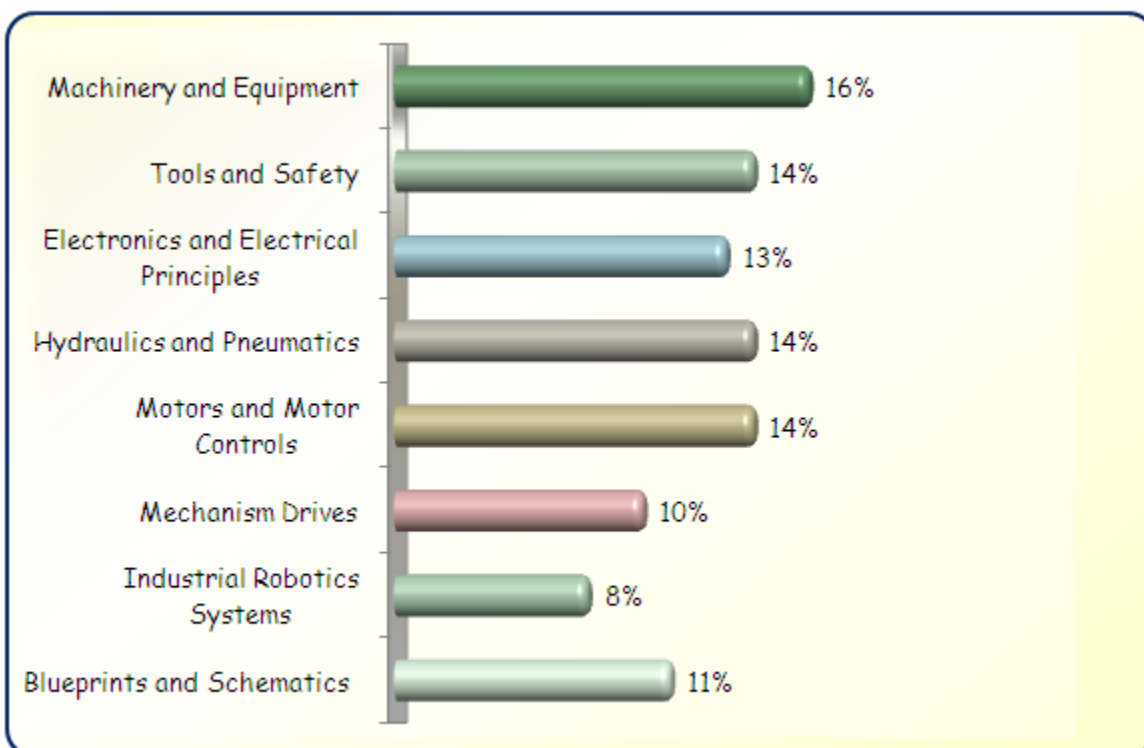
- Interpret various lines
- Exhibit knowledge of legends
- Interpret blueprint and schematic components
- Interpret title block information
- Demonstrate knowledge of views, angles, and tolerances

Written Assessment:

Administration Time: 3 hours

Number of Questions: 169

Areas Covered:



Sample Questions:

A flow meter measures

- A. force per unit of area
- B. volume per unit of time
- C. the product of force and area
- D. the product of volume and time

The electrical component used for memory logic is the

- A. control transformer
- B. closed pushbutton
- C. control relay
- D. circuit breaker



A body weighing 100 pounds is lifted 10 feet. What is its change in potential energy?

- A. 10 pounds
- B. 1,000 pounds
- C. 10 foot pounds
- D. 1,000 foot pounds

The graphite connectors that ride against the motor commutator are called

- A. brushes
- B. slip rings
- C. armatures
- D. fields

The zero point of a robot is considered the

- A. first program step
- B. last program step
- C. origin of a coordinate system
- D. point of axis movement

Performance Assessment:**Administration Time:** 3 hours**Number of Jobs:** 4**Areas Covered:****20% Connect and Operate a Circuit**

Assemble pneumatic circuit, test functionality of automatic mode, adjust flow control, switch to manual mode, safety.

31% Assemble a Multiple Shaft Gear Drive System

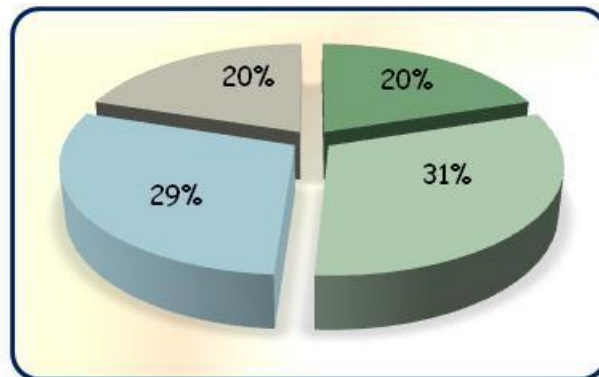
Mount and level motor, install and align flexible coupling, install and adjust gears, install prony brakes, start and run motor, record motor current, torque down prony brakes, record motor current rise, safety.

29% Read and Interpret an Industrial Blueprint

Material use, surface finish, surface tolerance, identify "Line B", include angle on taper, safety.

20% Troubleshoot an Electrical Control System

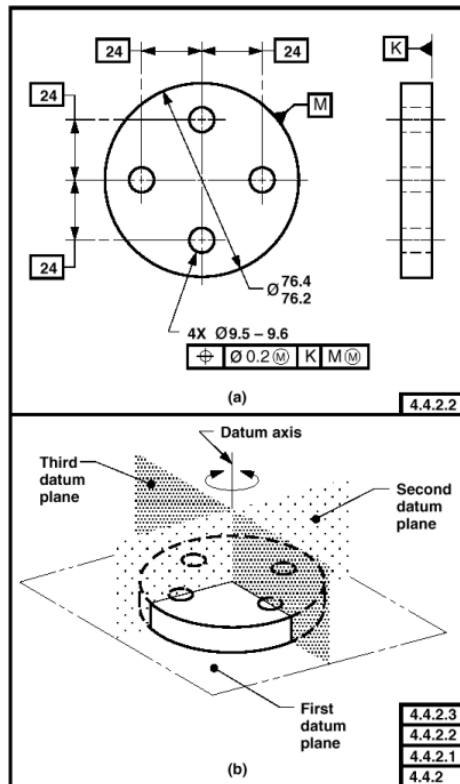
Determine the malfunction, remove faulty fuse, replace fuse, start and run motor, safety.



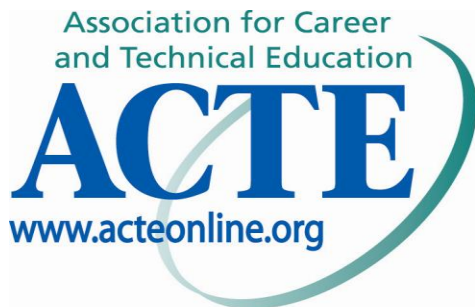
Sample Job: Read and Interpret an Industrial Blueprint

Maximum Time: 30 minutes

Participant Activity: The participant will read the blueprint provided and properly record specifications.



The Association for Career and Technical Education (ACTE), the leading professional



organization for career and technical educators, commends all students who participate in career and technical education programs and choose to validate their educational attainment through rigorous technical assessments. In taking this assessment you demonstrate to your school, your parents and guardians, your future employers and yourself that you understand the concepts and knowledge needed to succeed in the workplace. Good Luck!

