

Michelin North America, Inc.



Industrial Maintenance Interview Outline



Industrial Maintenance Technical Interview Outline

The Technical Interview consists of the following components:

- Aptitude Battery (*no calculators allowed*)
- Multi Skill Test (*non programmable calculators allowed*)
- Recommendation for a Personnel Interview (*application required*)

The 1st step in the process is the Aptitude battery (see outline). The aptitude testing session is conducted in a mass screening atmosphere, normally in a lecture, class or conference room. A presentation precedes the testing to inform applicants of our client's company, benefits, career opportunities, and to answer your questions. A one and one-half (1 ½)-hour block of time is required to conduct a session and feedback is given to each individual. *Successful completion of this step is required in order to proceed to the next step.*

The 2nd step will consist of a Multi Skill assessment on mechanical, electrical, and Industrial Math. This assessment has a two (2) hour maximum time limit. The results will be reviewed with the candidate upon completion. *Successful completion of this step is required in order to proceed to the next step.*

Upon successful completion of Step #1 and Step #2, the candidate will be referred for a Personnel Interview. Usually, this interview will be scheduled with the company within 5-10 business days. Occasionally, it could be completed on the same day as the Technical Interview.

Other Notes:

- Confirm a testing session (*see invitation letter/email*)
- Bring a calculator
- Go to our resources page <http://careers.michelin-us.com/reltech.html> to download the Michelin mechanical, electrical, and math reference material



Outline of the Aptitude Test Battery

*** CALCULATORS NOT ALLOWED ***

Test #1: Applied Math Skills (20 minutes long)

- Ability to apply math skills to practical applications of everyday life
- Ability to add, subtract, multiply and divide
- Ability to function with whole numbers, decimals and fractions

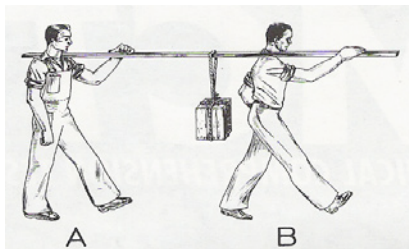
Examples:

- (A) What is the total weight of four kegs of nails if each keg weighs 100 pounds?
- (B) There are 8 gallons of water in a tank which can hold 16.5 gallons. How many gallons can be added to this tank?
- (C) How many feet are there in 100 inches?

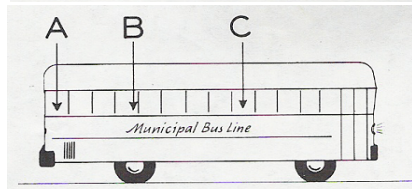
Test #2: Mechanical Comprehension (30 minutes long)

- Ability to analyze pictures and determine elements and principles of mechanical concepts.

Look at Sample X and Y on this page. It shows two men carrying a weighted object on a plank, and it asks, "Which man carries more weight?" Because the object is closer to man B than to man A, man B is shouldering more weight.



X
Which man carries more weight?
(If equal, mark C.)

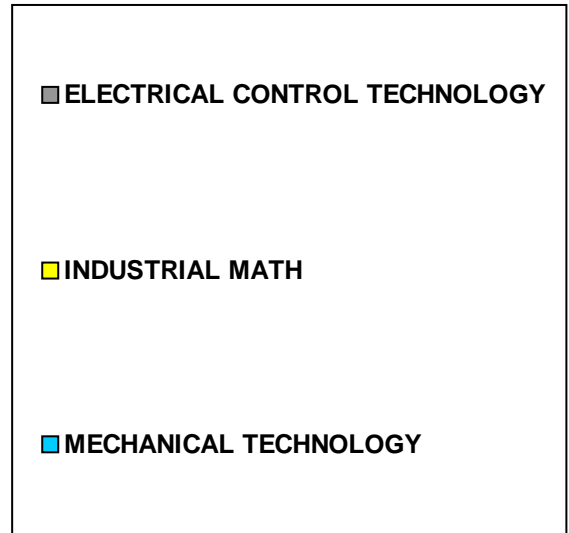
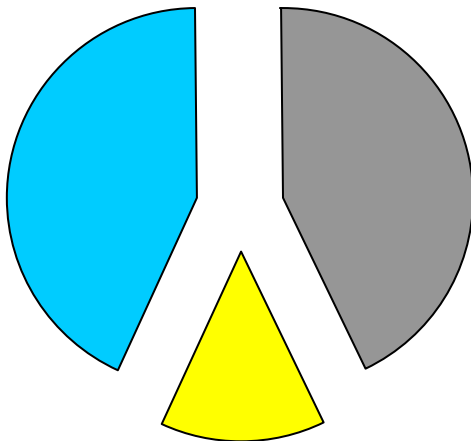


Y
Which letter shows the seat where
a passenger will get the smoothest ride?

Michelin North America, Greenville SC

Entry Level "Reliability Technician" Assessment

Assessment Major Topic Percentages



Number of Questions: 145
Number of Task Statements Assessed: 46

<u>Major Topic</u>	<u># of Questions</u>	<u>Percentage</u>
ELECTRICAL CONTROL TECHNOLOGY	62	42.8%
INDUSTRIAL MATH	20	13.8%
MECHANICAL TECHNOLOGY	63	43.4%

Knowledge and Skill Assessment Task Statements

ELECTRICAL CONTROL TECHNOLOGY

AC MOTORS

Able to troubleshoot motors (opens, grounds, and shorts)

Knowledge of AC motor construction

Knowledge of AC motor operation (squirrel cage, wound rotor, etc...)

Knowledge of nameplate data

Knowledge of wiring configurations

AC THEORY

Able to calculate AC voltages and currents (effective, average, and peak)

Knowledge of AC voltage and current (effective, average, and peak)

ACTUATORS AND SENSORS

Knowledge of common detectors

Knowledge of different operator heads and contact configurations

Knowledge of operation of proximity sensors

BREAKERS AND FUSES

Knowledge of fuse and breaker types and ratings

DC THEORY

Able to apply Ohm's law to solve problems

Knowledge of capacitance

POWER AND CONTROL DEVICES

Able to determine faulty power and control devices

Knowledge of contactor and control relay operation

Knowledge of electrical and mechanical interlocks

Knowledge of the operation of "seal in" circuits

Knowledge of timer operations

TRANSFORMERS

Knowledge of nameplate data and ratings

Knowledge of transformer theory

TROUBLESHOOT POWER AND CONTROL CIRC

Knowledge of electrical schematic diagrams

INDUSTRIAL MATH

FUNDAMENTALS

- Knowledge of area, volume, mass and weight*
- Knowledge of concepts of algebra*
- Knowledge of exponents*
- Knowledge of ratios and proportions*

METRIC SYSTEM

- Knowledge of US and metric conversions*

TRIGONOMETRY

- Knowledge of concepts of trigonometry*
- Knowledge of right angle trigonometry and vectors*

MECHANICAL TECHNOLOGY

APPLIED FORCES

- Knowledge of common units of torque*
- Knowledge of force, distance and fulcrum*
- Knowledge of torque and speed relations*

BEARINGS

- Able to install and remove various types of bearings*
- Knowledge of bearing installation techniques*
- Knowledge of plain and anti-friction bearings*

DRIVE SYSTEMS

- Able to determine direction of rotation in a drive system*
- Able to perform alignments using a straight edge and feeler gauge*
- Able to perform parallel/angular alignments*
- Knowledge of gear backlash*

FASTENERS

- Able to correctly install fasteners*
- Knowledge of proper torquing procedures*
- Knowledge of standard and metric fasteners*

LUBRICATION

- Knowledge of the properties of lubricants*

PRINT READING

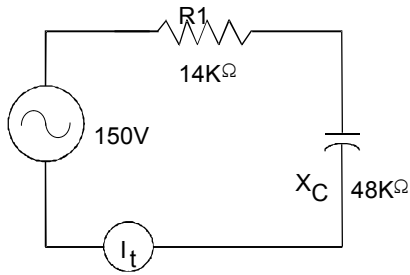
- Able to interpret and differentiate between all types of sectional views*
- Knowledge of sectional views*

SHOP PROJECTS

- Able to measure accurately to 0.001 inch or 0.02 millimeters*
- Able to use calipers, micrometers, height gauges, feeler gauges, dial indicators, and squares*

Electrical Written Test Examples

In the figure below, what is the total current of the circuit?

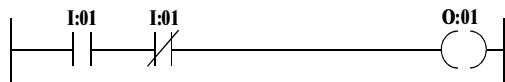


- A. 1.2 mA
- B. 2.4 mA
- C. 3.0 mA
- D. 10.7 mA

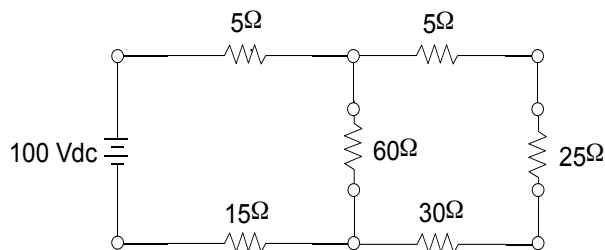
To prevent a voltmeter from loading the circuit being measured, the

- A. meter impedance should be low
- B. ohms per volt should be high
- C. sensitivity should be low
- D. circuit impedance should be high

Identify (if any) the logic traps that appear in the PLC ladder logic below.



- A. always on
- B. no trap, rung okay
- C. no way to turn rung off once true
- D. always off



The total resistance of the above circuit is _____ ohms.

- A. 50
- B. 100
- C. 150
- D. 200

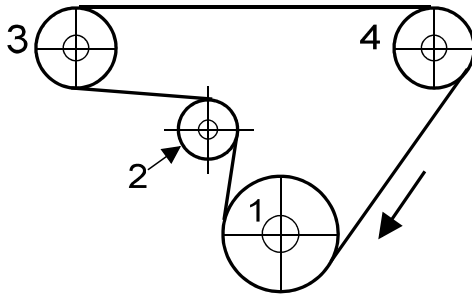


Mechanical Written Test Examples

Which tool would you use to put threads inside a hole?

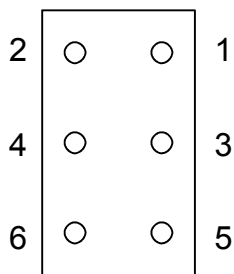
- A. file card
- B. snips
- C. pin punch
- D. tap

Which of the following pulleys turn the same direction as #1?



- A. 2 & 4
- B. 2 & 3
- C. 3 & 4
- D. 1 & 2

A correct torquing pattern for the figure below would be



- A. 123456
- B. 164235
- C. 341625
- D. 634125