



## **Automotive Service Technology**

### **2023 SkillsUSA Michigan State Championships Contest Description Task and Materials List**

#### **CONTEST LOCATION:**

M-TEC Tassell Center  
622 Godfrey Ave SW  
Grand Rapids, MI, US  
(616) 234-3800  
<http://cms.grcc.edu/node/2006>

#### **RESUME:**

Each student must submit a one-page printed resume before the contest start at the contest site (present to contest coordinator, not judges). The resume is no longer submitted online. This is the only time that resumes can be turned in. Failure to do so will result in a 10 point penalty.

#### **SECTION I** **GENERAL INFORMATION**

#### **TASKS TO BE PERFORMED:**

1. Engine Mechanical: Diagnosis and repair of cylinder head, valve train, engine block, and lubrication.
2. Suspension, Steering & Alignment: Diagnosis and repair of steering & suspension system and wheel alignment.
3. Brakes: Diagnosis and repair of the hydraulic, drum and disc brakes systems and ABS systems.
4. Electrical Systems: Diagnosis and repair of the battery; starting, charging, lighting systems and accessories.
5. Drivability: Diagnosis and repair of on-board engine management fuel and ignition systems. Station sponsored by General Motors.
6. Drive Train: Diagnosis and repair of transmission, transaxle, and rear axles.
7. Environmental, Health, and Safety: Identify and perform safe shop practices, interpret Material Safety Data Sheet information.
8. Electronic Service Information: Locate bulletins, repair procedures, and service specifications using electronic service information system.

9. New Vehicle Prep: perform new car preparation according to manufacturer's recommendation. Identify areas of concern, reference service information, document recommended repairs, and perform safe shop practices. Station sponsored by Toyota

10. Written test: Designed to test contestant's knowledge of 8 ASE areas. The score will be factored into the overall contest score.

<u>CONTEST</u>	<u>ORIENTATION</u>	<u>CONTEST</u>	<u>DEBRIEFING</u>
Master Contest	8:00 AM	8:20 AM - 2:30 PM	2:30 PM

Note: Duration is subject to change depending on number of contestants. Orientation & Contest Briefing will begin as close to the scheduled times as possible. Students arriving late may not be allowed to compete if competition has started.

The written portion of this competition will be given after the other stations are complete. We will also allow for a break so contestants can get something to eat prior to start. See below.

### **Written Test Schedule - Saturday, April 15, 2023:**

***NEW*** - All Automotive Service Technology - Overall contestants need to take the following tests. ***Attendance is mandatory! Failure to take these tests will result in NO POINTS for that section of the contest!***

#### **NEW!**

- The written test will be given on Saturday after the other station rotations are complete and a lunch break is provided. The test will begin approximately 1:30 and will last 1 hour.

**STUDENTS MUST SUPPLY: (This applies to all automotive contests.)**

- \* 1 page resume
- \* Safety glasses with side shields or goggles
- \* Appropriate dress consisting of one or two-piece work clothes
- \* 2(two) #2 pencils

**STUDENT DRESS CODE:** Due to the professional nature of this contest, contestants are required to wear apparel appropriate to the trade.

- Leather work shoes are required - no athletic shoes allowed.
- Only shirts with a collar are acceptable, **NO TEE SHIRTS-no exception**. Shirts are to be tucked into trousers.
- Basic work-style jeans will be acceptable, however trousers are preferable.
- Any necklaces, bracelets and rings must be removed and long hair is to be tied back.
- No name and/or school identifying clothing

It is the responsibility of the instructors to ensure their students are properly prepared and supervised for these events. Students will not be allowed to compete if they do not have the proper shoes or if their attire presents a safety issue. All contestants called into briefing room will be inspected by the Resolution Team\* prior to contest briefing. **ANY CONTESTANT NOT APPROPRIATELY DRESSED WILL RECEIVE A MAXIMUM OF 50 POINT DEMERIT FROM THEIR FINAL SCORE.** [Click here for Clothing Assessment Rubric](#)

All contestants and instructors are expected to act with courtesy and respect to all contest staff

and fellow contestants. **ANYTHING LESS MAY RESULT IN REMOVAL/EXCLUSION FROM CONTEST.**

**\*The Resolution Team will consists of one senior advisor (20 years or more) and one additional advisor who is a contest coordinator and/or is selected by the Automotive Service Technology Technical Committee.**

**SPECIAL INSTRUCTIONS:**

Contestants will be required to read and understand OEM diagnostics and specifications throughout the contest.

Contestants should be familiar with the SAE J1930 Emissions/Electronic Systems terms and abbreviations.

**EQUIPMENT SUPPLIED BY TECHNICAL COMMITTEE:**

Contestants will not have to bring hand tools and equipment to the contest. They will have some options on the following equipment:

Computer Scanners - Global Diagnostic System (GDS2)/MDI will be provided or you may bring your own. (It must be capable of reading 2022 GM vehicle data).

Digital Volt/Ohm Meter (DVOM) - Fluke Model #87/88 will be provided, however, due to the difficulties students exhibit when using DVOM's that they are unfamiliar with, the Technical Committee recommends that students bring their own. (It must have a minimum of 10 MegaOhm input impedance)

Battery/Starting & Charging System Testers - Midtronics or equivalent will be provided or you may bring your own (providing it has similar capability to the one listed above).

**NOTE: Conductance style testers (i.e. Midtronics, Snap-on MicroVAT) are fast becoming a standard tool in the industry. These testers will be used for Batt/Start/Chg system testing exclusively during the 2022 contest.**

Brake Measuring and Flaring Tools - Rotor/Drum measuring tools will be provided in both English and Metric. ISO and Double Flaring tools will be provided or you may bring your own. **NO HYDRAULIC TYPE FLARING TOOLS ALLOWED.**

Micrometers - English/metric micrometers will be provided or you may bring your own. Calibration of all your equipment is your responsibility. **NO DIGITAL MICROMETERS PERMITTED.**

Ammco Brake Lathes (4000E) - Bench style units with drum and rotor capability will be provided.

Torque and Angle Indicator - Torque wrenches and Snap-on TA360's will be provided or you may bring your own.

**IMPORTANT: The Technical Committee has observed that many students seem to have difficulty using tools and equipment they are unfamiliar with. Therefore, students are**

**permitted to bring their own equipment, provided it is clearly labeled with the students name and/or your school's identification. Equipment that cannot be hand carried through the contest must be dropped off well in advance of the contest briefing so it can be placed at the station for the student to use. Calibration of your equipment is your responsibility.**

Cameras and / or video camera policy: NO VIDEO TAPING BY TEACHERS, ADVISORS, OR PARENTS WILL BE ALLOWED DURING THE CONTEST. Anyone wanting video of the contest should make arrangements ahead of time by contacting the Technical Committee. Photographs during the contest will also be restricted. Special arrangements will be made for photo opportunities following the contest.

## **SECTION II**

### **CONTEST OVERVIEW FOR MASTER TECHNICIAN CONTEST**

#### **ELECTRONIC SERVICE INFORMATION (ESI)**

##### **DESCRIPTION OF CONTEST:**

This contest is designed to test the basic skill and knowledge of an entry level technician by:

- \* Locating service information on a Mitchell based ESI system.
- \* Performing several vehicle/complaint type inquiries
- \* Correctly identifying diagnostic and repair procedures

##### **Tools and Equipment to be used:**

- \* Computers (provided)

#### **ENVIRONMENTAL, HEALTH, AND SAFETY PROCEDURES**

##### **DESCRIPTION OF CONTEST:**

This contest is designed to test basic skill and knowledge of an entry-level technician by:

- \* Correctly identifying unsafe conditions in a service bay area
- \* Locating information found in various sections of Material Safety Data Sheets (MSDS)
- \* Interpret information found on common shop chemical labels
- \* Demonstrating proper lifting techniques
- \* Identifying correct personal protective equipment

##### **Tools and equipment to be used:**

- \* MSDS
- \* Typical equipment used in service bay area

ENGINE MECHANICAL

## DESCRIPTION OF CONTEST:

This contest is designed to test basic skill and knowledge of an entry-level technician by:

- \* Performing several engine repair procedures
- \* Locating service procedures and specifications in service manual
- \* Correctly using precision measurement tools

**Tools and equipment to be used:**

- \* Straightedge
- \* Feeler gauge set
- \* Valve spring compressor
- \* Torque wrench & angle indicator
- \* Small hole "T" gauge
- \* Micrometer - English and Metric
- \* Necessary hand tools
- \* Reference materials

DRIVABILITY

## DESCRIPTION OF CONTEST:

This contest is designed to test the basic skills and knowledge of an entry-level technician by:

- \* Identifying fuel and emission components
- \* Identifying OBD II diagnostic trouble codes
- \* Using diagnostic charts
- \* Performing diagnostic procedures on a late model General Motors engine control system

**Tools and equipment to be used (will be provided):**

- \* Service manual (Printed)
- \* Diagnostic Scan Tool (GDS2/MDI)
- \* Digital Volt/Ohm Meter
- \* 12 Volt Test light
- \* Jumper wires
- \* Terminal Adapters

ELECTRICAL

## DESCRIPTION OF CONTEST:

This contest is designed to test the basic skills and knowledge of an entry-level technician by:

- Using Ohm's Law to calculate electrical circuit values
- Taking electrical measurements using a Digital Volt/Ohm Meter
- Reading and interpreting wiring diagrams
- Building electrical circuits
- Troubleshooting electrical circuits
- Testing electrical components

**Tools and equipment to be used (will be provided):**

- Digital Volt/Ohm Meter (Fluke 87/88)
- 12-volt test lamp
- Jumper leads
- Necessary hand tools

SUSPENSION, STEERING AND ALIGNMENT

## DESCRIPTION OF CONTEST:

This contest is designed to test the basic skill and knowledge of an entry-level technician by:

- \* Identifying suspension and steering components
- \* Diagnosing front and rear suspension alignment angles
- \* Interpret tire wear patterns and alignment readings
- \* Identify, diagnose, and repair TPMS
- \* Using TIA standards for tire repair

Tools and equipment to be used (will be provided)::

- \* Necessary hand tools
- \* Reference materials
- \* TPMS activation tool (SNAP-ON TPMS4 or equivalent)
- \* Hunter alignment equipment or equivalent

**Tools and equipment to be used (will be provided)::**

- \* Necessary hand tools
- \* Reference materials
- \* TPMS activation tool (OTC Tire Inflation Position Switch (TIPS service tool) (Green, Red, Blue tool) or equivalent) - Bartec 400SD
- \* Hunter alignment equipment or equivalent

DRIVETRAIN

## DESCRIPTION OF CONTEST:

This contest is designed to test the basic skill and knowledge of an entry-level technician by:

- \* Identifying drivetrain components including automatic and manual transmissions, transaxles, and rear axles.
- \* Finding procedures and specifications in a service manual
- \* Taking measurements of drive train components
- \* Interpreting transmission diagnostic flow charts

**Tools and equipment to be used (will be provided):**

- \* Necessary hand tools
- \* Service manuals
- \* Dial indicator
- \* Torque wrench
- \* Solenoid testing block

BRAKES

## DESCRIPTION OF CONTEST:

This contest is designed to test the basic skill and knowledge of an entry-level technician by:

- \* Performing service procedures on hydraulic brake components
- \* Measuring brake system components
- \* Servicing brake assemblies
- \* Properly flaring brake tubing
- \* Identifying/diagnosing ABS system components
- \* Adjusting parking brake on rear brake caliper
- \* Set up Rotor/Drum with & without hub on a brake lathe

**Tools and equipment that will be provided:**

**(Students may bring their own flaring and measuring tools - see "IMPORTANT" note under section titled Equipment supplied by Technical Committee.**

- \* Rotor and drum measuring tools
- \* Disc and drum service tools
- \* Brake line flaring tools
- \* Reference material
- \* DVOM
- \* Scan Tool



## NEW VEHICLE PREPARATION

### DESCRIPTION OF CONTEST:

This contest is designed to test the basic skill and knowledge of an entry-level technician.

Contestant will:

- Perform new vehicle prep.
- Find and use correct procedures from service information
- Analyze conditions and determine corrective procedure
- Identify vehicle components

### **Tools and equipment that will be provided:**

- \* Reference material
- \* DVOM
- \* Cooling system pressure tester

Revised 1/25/23

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# SCORECARD Automotive Service Technology

Contestant Number

Items Evaluated	Possible Points								
<b>New Vehicle Prep</b>	<b>100</b>								
<b>Drivability</b>	<b>100</b>								
<b>Alignment/Suspension/Steering</b>	<b>100</b>								
<b>Environment, Health &amp; Safety</b>	<b>100</b>								
<b>Electrical Systems</b>	<b>100</b>								
<b>Drive train</b>	<b>100</b>								
<b>Brakes</b>	<b>100</b>								
<b>Engine Mechanical</b>	<b>100</b>								
<b>Electronic Service Information</b>	<b>100</b>								
<b>ASE Written Test</b>	<b>100</b>								
<b>Résumé Penalty</b>	<b>0 or -10 only</b>								
<b>Clothing Penalty</b>	<b>0 to -50</b>								
<b>Total Possible Points</b>	<b>1000</b>								

**Date:** \_\_\_\_\_

**Judges' Signatures:**

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