SkillsUSA
2012 Contest Projects

Automotive Service Technology

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2012 AST HIGH SCHOOL CONTEST STATIONS

TASK	ON-VEHICLE WORKSTATIONS	SPECIAL TOOLS PROVIDED
S1 Vehicle HVAC System Diagnosis and Testing	Students will be judged on their ability to read and use electronic schematics and service information, correctly use test equipment, and use diagnostic strategies to identify root cause. Car is bugged. Students will be asked to explain the logic behind the troubleshooting procedure.	Toyota Scantool – Techstream
S2 Vehicle Engine Performance Diagnosis and Testing	Students will use a repair order to identify customer complaint. They will diagnose and repair faults related to the engine control and emissions system. This includes drivability, MIL-ON DTC and Engine Control Module related issues. Students will be expected to read schematics/wiring diagrams, locate information using factory service information, correctly connect and use test equipment, and use diagnostic strategies to identify root cause. Car is bugged. Parts replacement may be required.	
S3 Vehicle Body Electrical Diagnosis and Testing	Diagnose electrical circuits on car related to battery, starting, charging, lighting, and accessories. Students will be expected to read schematics, locate information in service information, correctly connect and use test equipment, and use diagnostic strategies to identify root cause. Car is bugged. Use of repair order.	

BENCH WORKSTATIONS		
S4 Job Interview	Students demonstrate they can clearly and completely fill out a job application, communicate clearly and effectively and have appropriate professional behaviors during the job interview. Printed copy of resume required.	Prior training in PDP Level I & II to be completed. **Contestant must bring printed copy of Resume to the Contestant Orientation Meeting.**
S5 Environment, Health and Safety	Students demonstrate their knowledge of automotive work related safety equipment, environmental issues, procedures and familiarity with MSDS and PPE.	Access to CCAR's S/P2® e-learning program is provided free of charge to competitors in the SkillsUSA Competition. BEFORE the competition, instructors are asked to contact CCAR by email at skillsusa@ccar-greenlink.org to receive their students' log-on information for the S/P2 website. Students MUST COMPLETE the S/P2 courses IN ADVANCE of the competition. Any questions, call toll free: 1-888-772-3535.
S6 Electrical Circuit Diagnosis, Testing, and Wiring Repair.	Students will measure resistance, voltage, amperage with a shunt, and voltage drop measurements on a bench circuit board. Students will demonstrate proper circuit diagnosis to locate faults placed in various electrical circuits.	
S7 Electronic Service Information	Students locate specifications and other service information using the ChiltonPRO online system.	ChiltonPRO
S8 Steering and Suspension	Perform tire related tasks including proper tire inspection to identify age, inflation pressure, load carrying capacity, mounting instructions, proper repair, rotation patterns, speed ratings, tire construction, and UTQG ratings of provided tires. Identify and diagnose direct style tire pressure sensors and tire wear patterns related to steering, suspension, and alignment.	

S9 Brakes	Students will demonstrate their ability to inspect, service, and determine necessary action related to disc and drum brake systems. Part and component identification, inspection, measurement, disassembly and assembly may be required.	
S10 Manual Drive Train	Students will demonstrate understanding of basic manual transmission service, mechanical adjustments, parts identification, power flow, normal measurements and inspection. Removal and replacement of components may be required.	
S11 Automatic Transmission	Students will demonstrate understanding of basic automatic transmission service, mechanical adjustments, parts identification, normal measurements and inspection. Removal and replacement of components may be required.	
S12 Engine Mechanical	Contestants will demonstrate their knowledge of the internal combustion gasoline engine. As well as use precession measurement instruments and the Factory Repair Manual to inspect various engine components. Contestants will be required to identify various engine components and answer engine mechanical questions.	
S13 Written Test ASE	Given by ASE, this 100 question written test will test the student's technical knowledge of automobile diagnosis and repair in the vehicle system specialty areas of: • Engine Repair • Automatic Transmission/Transaxle • Manual Drive Train and Axles • Suspension and Steering • Brakes • Electrical/Electronic Systems • Heating and Air Conditioning • Engine Performance	Test booklet answer sheet, pencil.

2012 AST COLLEGE CONTEST STATIONS

TASK	ON-VEHICLE WORKSTATIONS	SPECIAL TOOLS PROVIDED
P1 Vehicle HVAC System Diagnosis and Testing	Perform diagnosis and repair of a problem related to the HVAC/Climate Control system on a CAN bus vehicle. Students will be expected to read schematics, locate information in service information, correctly connect and use test equipment, and use diagnostic strategies to identify root cause. Car is bugged Parts replacement. Use of repair order.	A/C Pressure gauges. Chrysler Star Mobile or wiTECH software.
P2 Vehicle Engine Performance Diagnosis and Testing	Students diagnose faults related to the engine control module, drivability and emissions, using service information and diagnostic equipment. Students will be expected to read schematics, locate information in service information, correctly connect and use test equipment, and use diagnostic strategies to identify root cause. Car is bugged. Use of repair order.	G.M. Tech 2 Scan Tool.
P3 Vehicle Wheel Alignment	Students will demonstrate their understanding of wheel alignment angles, setup and use of alignment measuring equipment, and diagnosis of customer concerns. Use of repair order.	Hunter will provide WA400 consoles with Hawkeye Elite sensors running Winalign 12 software.
BENCH WORKSTATIONS		
P4 Customer Service	Act in an appropriate and professional manner. Inspect and diagnose components in the Accessory Belt Drive System (ABDS). Clearly and effectively communicate with the customer information on the diagnosis and repair of their vehicle. Printed copy of resume required.	**Must bring printed copy of Resume to the Contestant Orientation Meeting.**

P5 Environment, Health and Safety	Students demonstrate their knowledge of automotive work related safety equipment, environmental issues, procedures and familiarity with MSDS and PPE.	Access to CCAR's S/P2® e-learning program is provided free of charge to competitors in the SkillsUSA Competition. BEFORE the competition, instructors are asked to contact CCAR by email at skillsusa@ccar-greenlink.org to receive their students' log-on information for the S/P2 website. Students MUST COMPLETE the S/P2 courses IN ADVANCE of the competition. Any questions, call toll free: 1-888-772-3535.
P6 Electrical Circuit Testing	Students will measure resistance, voltage, amperage with a shunt, and voltage drop measurements on a bench circuit board. Students will demonstrate proper circuit diagnosis to locate faults placed in various electrical circuits.	
P7 Electrical Service Information	Students locate specifications and other service information using electronic service information resources.	Mitchell 1- Shop-Key Electronic Service Information.
P8 Electrical Diagnosis	Electrical diagnosis through scope pattern interpretation. Basic Labscope operation.	Snap-On (Modis) For additional training information go to: http://www1.snapon.com/diagnostics/us/ForumsandTraining/TrainingSolutions/Courses.htm
P9 Brakes	Service and testing of ABS brake systems, interpret customer concerns and diagnose system faults.	Snap-On (Vantage Pro) For additional information go to: http://www1.snapon.com/diagnostics/us/ForumsandTraining/TrainingSolutions/Courses.htm

P10 Manual Drive Train	Service, testing and diagnosis of manual transmission or transaxle drive train components. Students will demonstrate understanding of basic transmission service, mechanical adjustments, parts identification, normal measurements and inspection. Perform bench diagnosis of transmission and identify faulty components.	
P11 Automatic Transmission	Service, testing and diagnosis of automatic transmission or transaxle drive train components. Students will demonstrate understanding of basic transmission service, diagnosis of solenoids and sensor, mechanical adjustments, parts identification, normal measurements and inspection. Perform bench diagnosis of transmission. Identify faulty components/circuits.	
P12 Engine Mechanical	Engine Mechanical workstation will focus on engine block, crankshaft, piston and connecting rod service procedures, measurements and inspection. OEM service information will be used for the workstation BUT general knowledge of gasoline engine repair and rebuilding procedures is required.	
P13 Written Test	Given by ASE, this 100 question written test will test the student's technical knowledge of automobile diagnosis and repair in the vehicle system specialty areas of: • Engine Repair • Automatic Transmission/transaxle • Manual Drive Train and Axles • Suspension and Steering • Brakes • Electrical/Electronic Systems • Heating and Air Conditioning • Engine Performance	Test Booklet answer sheet, pencil.