

36th Annual Student Career Days
March 22 – 25, 2012
Kansas State University

SMALL ENGINE REPAIR

Description:

The student (maximum one individual per school), will be evaluated on knowledge and proficiency in repair of hand held outdoor power equipment engines. Competitor must show knowledge in engine component identification, engine operation theory, failure analysis, and competency in tool selection, shop safety, troubleshooting, repair, and testing of engines and related components. All participants will take a written exam on Friday, with the top scoring participants advancing to Saturday's event.

Time: 1 hour and 50 minutes

Limits: There is no limit to the number of individuals that may participate in the written exam. The number of individuals participating on Saturday will be limited to the host school's space availability with a maximum of 15.

JUDGING CRITERIA

Points: 100 possible points for the individual score; the individual score is doubled toward the team score for a total of 200 possible points.

Points will be assigned based on the following criteria:

1. Written exam (20 %)

The written exam will cover tool identification, small engine theory, operating systems, and engine component identification.

2. Practical Exam (80%)

Points for the practical exam will be assigned on the following criteria:

Fault analysis: 40%

Engine repair: 50%

Safe and correct use of tools and equipment: 10%

Time will be used as a tie breaker.

In the practical exam competitors will be required to work on an engine with a designated number of problems. Using self-supplied tools from a list provided, and special tools and parts provided by sponsor, competitors will be required to diagnose the problems in the engine, repair the problems and demonstrate proper operation of the engine. Competitors will be graded on safety, diagnostic knowledge, repair acumen and accuracy, engine performance, and time required to complete the test.

In the fall of 2009 all schools interested in the competition will be provided information specific to the competition, resources needed to prepare, as well as access to the STIHL online training program.

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Students are required to bring the following materials to the practical exam:

OSHA approved safety glasses. Students are required to wear long pants, collared work shirt or event shirt, and hard-soled leather shoes or boots. Leather or canvas athletic shoes are **not acceptable**.

Sponsor is required to supply the following materials for the event:

- All necessary engines, engine parts, work stations, test stands, power equipment, gasoline, oil, and any other needed supplies
- All necessary specialty tools
- Illustrated parts lists, service and repair instruction manuals
- All necessary information and materials for contest officials
- Sufficient number of judges and event monitors
- Any other items deemed necessary for this event

Areas to be tested in the practical exam:

Contestants will demonstrate their ability to perform various skills selected from the following list of competencies:

Engine Analysis

1. Use STIHL Engine Check to locate and identify faults
2. Determine best method to repair failure

Ignition

1. Inspect and test ignition components
2. Check coil/ignition module output
4. Test and repair/replace electronic ignition components
5. Test equipment-related switches and wiring harnesses

Fuel System

1. Inspect, service, repair, and adjust carburetor
2. Inspect, clean, and replace filters
3. Check fuel tank, tank vent, and lines

Starter System

1. Inspect starter system
2. Disassemble, service, and repair starting system

Exhaust

1. Inspect and service exhaust components
2. Check and clean exhaust ports

Diagnostic Tests

1. Test two-stroke crankcase pressure/vacuum
2. Test compression and/or leak-down

Repair Skills

1. After identifying faults, new parts are installed correctly
2. Engine is started and tuned to specification