

FY17 FFA AG MECHANICS CDE

Written Exam: 25 problem solving/multiple choice questions – 5 from each event area

Team Activity: (Honda GCV 160)

Area Information

Students should be familiar with the following sections of the Honda Engines Shop Manual (Fourth Edition – 61ZM000E4)

- Section 1 – Specifications
- Section 2 – Service Information
- Section 7 – Flywheel/Ignition Coil/Flywheel Brake
- Section 8 – Cam Pulley/Crankshaft/Piston/Cylinder Block

State Information

Each student should be familiar with all sections of the Honda Engines Shop Manual (Fourth Edition – 61ZM000E4)

This is a team activity that will require the efforts of each individual. Each student needs to be prepared for this section and will work together as a team.

Note:

All necessary tools will be provided that will be used during the Team Activity.

Approved Safety Glasses are required for Team Activity. (Meets or exceeds ANSI Z87.1-2003 safety standards.)

Skill Activities:

A. Machinery and Equipment

Area and State Information

Students should be familiar with/be able to:

- Hydraulics and fluid power formulas
- Calculate mechanical advantage
- Use precision measuring instruments (micrometer, dial calipers, etc...)
- Calculating fluid pressure, fluid flow rate, fluid power, specific gravity of a fluid, cylinder area, cylinder force, cylinder volume, etc...)
- Hydraulic Jacks (various kinds/sizes)

B. Electricity

Students should be familiar with reading motor control circuit line (ladder) diagrams, terminology, and interpreting name plate rating information of devices.

Necessary tools will be provided. You may bring Colored pencils for use on drawing diagrams.

Area Information

Students should be familiar with sections

- A-3, B-7, E-2e of AAVIM Electrical Controls, 2nd Edition.
- Electrical Symbols and Line Diagram PDF (On Website-FFA-Career Development Events-Ag. Mechanics)
- Motor Controls Circuit PowerPoint (On Website-FFA-Career Development Events-Ag. Mechanics)

State Information

- A-3, B-7, C-2, E-2e and Section H of AAVIM Electrical Controls, 2nd Edition.
- Electrical Symbols and Line Diagram PDF (On Website-FFA-Career Development Events-Ag. Mechanics)
- Motor Controls Circuit PowerPoint (On Website-FFA-Career Development Events-Ag. Mechanics)

C. Compact Equipment

Area Information: B&S Model 120000 Series.

Students should be familiar with the following sections of the Briggs & Stratton Ingle Cylinder OHV Air-Cooled Engines Manual (Part # 272781-8/09)

- Section 1 – Safety, Maintenance & Adjustments
- Section 6 – Cylinder Heads & Valves
- Section 12 – Engine Specifications

State Information

- Section 1 – Safety, Maintenance & Adjustments
- Section 6 – Cylinder Heads & Valves
- Section 12 – Engine Specifications

D. Environmental and Natural Resources

Area Information

Land Measurement using Level and Stadia Hairs. Students should be familiar with performing the following skills:

- Take rod readings.
- Measure distance with tape and/or instruments.
- Record field notes for differential, profile and topographic leveling.

State Information

- Use automatic leveling equipment.
- Determine field slope and length.
- Lay out contour ditches, basins, borders, contour levees, furrow and corrugation systems for irrigation
- Determine land area.

References:

- Website – Curriculum and SAE – Curriculum – High School Curriculum – Agriculture Mechanics – Agricultural Mechanics Systems – Agricultural Mechanics Technology II – Teaching Materials – Field Notes Worksheet Differential Leveling and Stadia Hairs
- Website – Curriculum and SAE – Curriculum – High School Curriculum – Agriculture Mechanics – Agricultural Mechanics Systems – Agricultural Mechanics Technology II – Teaching Materials – Field Notes Differential Leveling
- Website – Curriculum and SAE – Curriculum – High School Curriculum – Agriculture Mechanics – Agricultural Mechanics Systems – Agricultural Mechanics Technology II – Videos – Using Stadia Hairs to Determine Distance
- Website – Curriculum and SAE – Curriculum – High School Curriculum – Agriculture Mechanics – Agricultural Mechanics Systems – Agricultural Mechanics Technology II – Slideshows – Differential Leveling 1

FMO tractors - Acres Per Hour Chart

NOTE:

Students will be required to bring an engineer's scale ruler for the Area and State CDE

E. Structures

Area Information

- Welding Skill will be GMAW (MIG) Welding
- Welding may be required as any one of the following types of welding joints: Butt, Tee, or Lap.

State Information

- Welding Skill will be GMAW (MIG) Welding
- Welding may be required as any one of the following types of welding joints: Butt, Tee, or Lap
- GMAW vertical up position welding.

Welding may be required as any one of the following types of welding joints: Butt, Tee, or Lap

Welds will be required on 3/16" x 4" x 5" flat metal, metal pipe, or a combination.

Welding Equipment

- Welding Helmet – Shade 10
- Body Cover – Leathers, shop jackets, non – flammable coveralls
- Appropriate footwear
- Welding Gloves
- Pliers/tongs
- Safety glasses – approved
- Wire brush
- Soapstone
- Chipping hammer
- Please do not share tools and equipment between team members (bring one of each for each student).
- All other materials and tools will be provided.