

**Iowa FFA Agricultural Mechanics Career Development Event - 2006**

State of Iowa  
 DEPARTMENT OF EDUCATION  
 Career Education Division  
 Grimes State Office Building  
 Des Moines, IA 50319

CONTESTANT NAME \_\_\_\_\_

CONTESTANT SCHOOL \_\_\_\_\_

**INDUSTRY AND MARKETING SYSTEMS**

Problem Solving/Skills

Small Gasoline Engines (15 minutes)

A. Problem (10 points)

A flushing-gutter manure handling system in a swine facility uses a dump tank. The pump that fills the dump tank with water from a lagoon is normally powered by an electric motor. The electric motor has failed and the facility manager has hooked the pump to a 5-hp gasoline engine temporarily while repairs are made. The engine will need to run for 10 hours until repairs are made and will be loaded to its rated horsepower. The engine consumes gasoline at a rate of 0.15 gallons per hp-hr.

1. How much gasoline (in gallons) is used during the 10 hours of operation? \_\_\_\_\_ gallons
2. If the fuel tank on the engine holds 1.25 gallons, how many times must it be filled during the 10 hours of operation, including the first filling? \_\_\_\_\_ No. of times

B. Identification/Specifications of small gasoline engines. Use the supplied repair manual as needed. (15 points)

**1. Engine model number:** \_\_\_\_\_

**2. Specifications** Oil capacity: \_\_\_\_\_ fl. Oz.

Stroke: \_\_\_\_\_ inches

Cylinder bore: \_\_\_\_\_ inches

Spark plug gap: \_\_\_\_\_ inches

**3. Reject sizes** Cam gear journal: \_\_\_\_\_ inches

Cam lobe: \_\_\_\_\_ inches

Crank pin bearing: \_\_\_\_\_ inches

**4. Measurement** Is the spark plug gap acceptable? \_\_\_\_\_ Yes/No

Evaluation Score Sheet

| <u>Items</u> |                             | <u>Points</u>   |               |
|--------------|-----------------------------|-----------------|---------------|
|              |                             | <u>Possible</u> | <u>Earned</u> |
| 1.           | Problem .....               | 10              | _____         |
| 2.           | Model identification .....  | 1               | _____         |
| 3.           | Specifications .....        | 4               | _____         |
| 3.           | Reject sizes .....          | 3               | _____         |
| 4.           | Measurement .....           | 5               | _____         |
| 5.           | Safety and procedures ..... | 2               | _____         |

Total ..... 25