



2007 State Competition

FFA Agricultural Mechanics Contest

University of Missouri

50 points

Contestant # \_\_\_\_\_

Contestant Name \_\_\_\_\_

Chapter \_\_\_\_\_

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## Agricultural Machinery

**Directions:** Please circle the appropriate answer or fill in the blank for each question. When you are finished please turn your sheet in. Remember to put your name, contestant number and chapter on your paper. Not doing so will result in a zero for this section. If you have questions please feel free to ask.

**\* Up to 5 safety points will be deducted from your final score if necessary. Please wear your safety glasses and practice safe methods while competing in this activity.**

### Platform Activity (8 pts)

When combining someone throws a circular pan with a 15" diameter under the combine to determine what the header loss would be. Upon examination you see that there are  $x$  number of seeds in the pan from the header knocking the seeds out of the pods. Look at the pan tagged #1 to determine how many seeds you found. From this, determine the header loss in bushels per acre. If soybean prices are \$7.25 per bushel what is the monetary loss you would experience on 1000 acres.

$$\text{Area} = 3.14 * R^2$$

$$43560 \text{ ft}^2 = 1 \text{ acre}$$

$$1 \text{ lb} = 3375 \text{ seeds}$$

$$60 \text{ lbs} = 1 \text{ bushel of soybeans}$$

**1. Determine the header loss:**

\_\_\_\_\_ bu/ac

**2. Determine the monetary loss:**

\$\_\_\_\_\_

## **Telehandler Activity (8 pts)**

You are a farmer who is using pallet fork tines that weigh 650 pounds to lift a pallet of beans on top of another pallet. There are 66 bags of beans on a pallet and each bag weighs 50 lbs. What is the total load (in pounds) that must be lifted? Using the chart on the back page determine if this load could be safely lifted to a height of 10 feet if you need to extend the boom to a forward distance of 10 feet?

## **630 Platform (16 pts)**

### **4. What is the item tagged #2?**

- A. Header Height Control Sensor
- B. Reel Height Sensor
- C. Cutter Bar Height Sensor
- D. Grain Flow Sensor

### **5. What is the item tagged #3?**

- A. Reel Fingers
- B. Auger Knives
- C. Threshing Bars
- D. Auger Fingers

### **6. What is the item tagged #4?**

- A. Drive Pulley
- B. Reel Drive Sheave
- C. Knife Drive Sheave
- D. Auger Drive

### **7. What is the item tagged #5?**

- A. Header Height Cylinder
- B. Reel Height Cylinder
- C. Auger Adjustment Cylinder
- D. Header Lift Cylinder

### **8. What is the item tagged #6?**

- A. Multi Coupler
- B. SCV Hook-up
- C. Speed Sensor Control Box
- D. Hydraulic Junction Box

**9. What is the correct clearance between the auger and the stripper?**

- A. 1/16 in or 2 mm
- B. 1/8 in or 3 mm
- C. 1/4 in or 4 mm
- D. 1/2 in or 5 mm

**10. What is wrong if you have ragged and uneven cutting of crop?**

- A. Cutterbar set too far forward
- B. Reel tines pitched too far
- C. Auger too far from platform floor
- D. Cutterbar plugged with material

**11. The platform tilt adjustment is used to set the correct relationship between:**

- A. Reel and Ground
- B. Reel and Cutterbar
- C. Cutterbar and Auger
- D. Cutterbar/Skid Plates and Ground

## **220 Telehandler (18 pts)**

**12. What is the torque required for wheel nuts?**

- A. 260 N\*m or 140 ft-lb
- B. 360 N\*m or 240 ft-lb
- C. 460 N\*m or 340 ft-lb
- D. 560 N\*m or 440 ft-lb

**13. What is the capacity for the hydraulic system?**

- A. 15.1 gallons
- B. 16.1 gallons
- C. 17.1 gallons
- D. 18.1 gallons

**14. What is the ground clearance for this machine?**

- A. 325 mm or 10.7 in
- B. 425 mm or 16.7 in
- C. 525 mm or 22.7 in
- D. 625 mm or 28.7 in

**15. What is the correct engine oil viscosity when conditions are in between -4 and 104 degrees Fahrenheit?**

- A. SAE 5W40
- B. SAE 10W30
- C. SAE 15W40
- D. SAE 10W40

**16. What is the item tagged #7?**

- A. Boom Pin
- B. Fork Lift Bolt
- C. Bucket Pin
- D. Fork Leveling Cylinder Pin

**17. What is the item tagged #8?**

- A. Primary Cab Air Filter
- B. Secondary Cab Air Filter
- C. Air Conditioner Filter
- D. Heater Filter

**18. What is the item tagged #9?**

- A. Fuel Pump
- B. Air Circulator
- C. Water Pump
- D. Hydraulic Pump

**19. What is the item tagged #10?**

- A. Fuel System Water Separator
- B. Air System Water Separator
- C. Oil Water Separator
- D. Antifreeze Water Separator

**20. What is the item tagged #11?**

- A. Rollover Protection System
- B. Rollover Protective Structure
- C. Falling Object Protective Structure
- D. Storage Rack