



**2006 State Competition**  
**FFA Agricultural Mechanics Contest**  
**University of Missouri**  
**50 points**

**Contestant #** \_\_\_\_\_  
**Contestant Name** \_\_\_\_\_  
**Chapter** \_\_\_\_\_

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## Tractor Power

**John Deere 9520 (2 points each)**

1. What is the available hydraulic flow (gpm) at one SCV for this tractor?  
(Hint: This is the Scraper Special Tractor)
  - A. 30 gpm
  - B. 43 gpm
  - C. 48 gpm
  - D. 75 gpm
2. Look at the item tagged #2. What is the turning radius of this tractor?
  - A. 14.6 ft.
  - B. 15.6 ft.
  - C. 17.0 ft.
  - D. 19.5 ft.
3. How often should the air filter tagged #3a be cleaned?
  - A. 150 hrs.
  - B. 250 hrs.
  - C. 500 hrs.
  - D. Do not attempt to clean this filter
4. Approximately how much fuel remains when the level is at the bottom of the sight tube tagged #4?
  - A. 20 gal.
  - B. 25 gal.
  - C. 50 gal.
  - D. 70 gal.

5. What is the maximum allowable concentration of a bio-diesel blend that is recommended for use by the OEM in this fuel system?
  - A. 2.5 % (B2.5)
  - B. 5 % (B5)
  - C. 10 % (B10)
  - D. 20 % (B20)
  
6. What is the recommended inflation pressure for the tires on this tractor, assuming that they were duals and the tractor had a 30,000 lb. load on one axle?
  - A. 11 psi.
  - B. 15 psi.
  - C. 17 psi.
  - D. 19 psi.
  
7. You are having trouble pulling your scraper because you are losing traction. Is it recommended to use “triple tires” on this tractor to acquire the extra traction needed?
  - A. Yes
  - B. No
  - C. Maybe, if you had all the parts.
  
8. You are laser grading your bottomland fields for better drainage. Using this tractor, which gear is recommended for loading the scraper and maintaining a speed above 4 mph?
  - A. 5<sup>th</sup>
  - B. 6<sup>th</sup>
  - C. 7<sup>th</sup>
  - D. 8<sup>th</sup>

### **Troubleshooting the 9520 John Deere Tractor**

9. You notice that the engine power is reduced. According to the manual, what would most likely be the problem, given **this** tractor, and what components is it equipped with? (2 points)
  - A. operating with heavy ballast and full power
  - B. using PTO with tractor stationary
  - C. defective turbocharger
  - D. none of these would cause this problem
  
10. You have been using **this** tractor all morning and the transmission system is overheating. What could be the problem? (2 points)
  - A. low transmission oil
  - B. excessive load
  - C. pump malfunction
  - D. all of the above

11. You get into the tractor cab to start another work day and the starter is cranking very slowly. What might be the problem? (2 points)
- A. blown fuse
  - B. faulty battery connection
  - C. low battery output
  - D. transmission in gear
12. You notice that you have been filling up with fuel more often. What may be the problem in the engine to cause this higher consumption and how can it be solved? (2 points)
- A. incorrect fuel type/use a B20 fuel blend
  - B. injection nozzles dirty/see your John Deere Dealer
  - C. excessive ballast/add more weight
  - D. clogged air filter/remove filter and operate without it

**John Deere 4020 (2 points each)**

13. What type of fuel system does this tractor have?
- A. Gasoline
  - B. Diesel
  - C. Liquid Propane
  - D. Kerosene
14. What type of fuel injection pump is on this tractor?
- A. inline
  - B. common rail
  - C. rotary
  - D. carburetor
15. What is the ground speed of this tractor assuming it has 18.4-34 rear tires operating at 1900 rpm and the tractor is in 5<sup>th</sup> gear?
- A. 3.4 mph
  - B. 4.4 mph
  - C. 5.5 mph
  - D. 5.7 mph
16. What is the exhaust valve clearance (hot) on this tractor?
- A. .15 in.
  - B. .18 in.
  - C. .19 in.
  - D. .28 in.
17. Assume this row crop tractor has the syncro-transmission. What is the shipping weight of the machine?
- A. 8330 lbs
  - B. 8555 lbs
  - C. 8305 lbs

D. 8490 lbs

18. What is the cubic inch displacement of this engine?

- A. 454 cu in
- B. 404 cu in
- C. 360 cu in
- D. 350 cu in

19. You are trying to perform a hydraulic test on this tractor. The manual tells you to run the tractor under light load to bring the hydraulic system up to what temperature?

- A. 100-120 degrees F
- B. 120-140 degrees F
- C. 140-160 degrees F
- D. 160-180 degrees F

### **John Deere 4020**

**Identify the following items tagged 20-25 from the list given. (Answers are only used once) (2 point each)**

20. \_\_\_\_\_

21. \_\_\_\_\_

22. \_\_\_\_\_

23. \_\_\_\_\_

24. \_\_\_\_\_

25. \_\_\_\_\_

- A. Starter
- B. Radiator
- C. Generator
- D. Alternator
- E. Injection pump
- F. Spark plug
- G. Intercooler
- H. Hydraulic filter
- I. Fuel filter
- J. Engine Oil filter
- K. Water pump
- L. Fan clutch
- M. Crankcase dipstick
- N. Hydraulic reservoir dipstick
- O. Injector
- P. PTO Engage lever
- Q. Throttle
- R. Light switch
- S. SCV hydraulic lever