



4-H PETROLEUM POWER PROGRAM

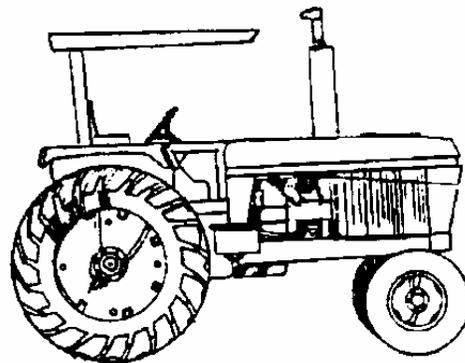
Questions and Answers

for

Tractor Operators Contest Junior Division (Supplement #1)

To be used as a supplement to whatever teaching materials are used at county level. Reproduce and distribute to all 4-H Tractor leaders and 4-H members participating in county, area and state contests.

NOTE: All test questions for Area and State Junior Tractor Operator Contests will be taken from this supplement.



1. Diseases kill _____ farm children than accidents. B
A. more
B. fewer

2. Extra riders are _____ permitted on a tractor. C
A. always
B. sometimes
C. never

3. Exhaust gases are deadly poison because they contain: A
A. carbon monoxide.
B. carbon dioxide.

4. Valve springs hold the valves open. B
A. True
B. False

5. Two 12-volt batteries connected in parallel yield: B
A. 6-volts.
B. 12-volts.
C. 24-volts.

6. Water is heavier than gasoline. A
A. True
B. False

7. All weather antifreeze and coolant ratio should be 1/1 with water. A
A. True
B. False

8. It takes half a second for a tractor accident to happen. In an emergency it may take you _____ to make the proper reaction to avoid the accident. B
A. 1/10 second
B. 1 second or more

9. Being a safe operator is mostly a matter of: B
A. pure chance.
B. thinking ahead and avoiding accident situations.

10. LPG tractors _____ require warming up before applying a load. A
A. do
B. do not

11. In a four cycle engine it takes _____ revolution(s) of the crank shaft to complete the firing in all of the cylinders. B
A. one
B. two
12. When a transmission is in overdrive the input shaft is turning faster than the output shaft. B
A. True
B. False
13. One of these is not a spark ignition engine. C
A. gasoline
B. LPG
C. diesel
14. A small two-cycle engine such as that used on a lawn mower does not have an oil pump. A
A. True
B. False
15. In a two-cycle engine there is one power stroke during _____ of the crankshaft. A
A. every revolution
B. every other revolution
16. A diesel engine compresses _____ on the compression stroke. A
A. air only
B. air and fuel
17. A stud bolt has: C
A. a cap on one end.
B. threads on one end.
C. threads on each end.
18. The head of a hex bolt has: A
A. 6 sides.
B. 8 sides.
C. 4 sides.
19. A sheet metal screw has threads: B
A. part way up.
B. all the way to the head.

20. A flat-head screw is usually used in: B
A. an over-size hole.
B. a countersunk hole.
C. for greater strength.
21. Tire pressure (PSI) means pounds per square inch. A
A. True
B. False
22. A carriage bolt uses _____ to keep it from turning. B
A. a square head
B. its neck
C. coarse threads
23. A plow bolt has: C
A. no head.
B. a round head.
C. a flat head.
24. The _____ of a plow bolt keeps it from turning. B
A. head
B. neck
25. Operating a tractor engine with a low engine temperature will result in _____ than when the temperature is normal. B
A. more power
B. less power
26. A charge indicator is sometimes called an: A
A. ammeter.
B. thermostat.
27. Low operating temperature of a tractor engine is usually the result of: B
A. full throttle operation which causes the fan to over-cool the engine.
B. a faulty thermostat.
28. A tachometer indicates: A
A. the number of revolutions per minute the engine is turning.
B. the number of feet per second the tractor is traveling.
29. Adding all weather antifreeze and coolant lowers the boiling point of the coolant solution. B
A. True
B. False

30. The same fuel gauge _____ be used for both gasoline and LPG tractors. B
A. can
B. cannot
31. If you are plowing and the red light comes on, indicating low oil pressure, you should: C
A. leave the tractor engine running and go for help.
B. increase the throttle setting to see if the light will go out.
C. shut the engine off at once.
32. Most tractors _____ have a warning light to tell you when to change oil. B
A. do
B. do not
33. _____ tractors can be shifted from one gear to another without using the clutch. B
A. All
B. Some
34. Diesel tractors vary engine speed by regulating: C
A. the amount of air taken in during each intake stroke.
B. the time of fuel injection.
C. the amount of fuel injected.
35. If you apply only one brake while traveling at a high rate of speed you might: B
A. kill the engine.
B. upset the tractor.
36. When you push down on a foot-pedal clutch, the clutch is: B
A. engaged.
B. disengaged.
37. The compression in the cylinder of a gasoline engine is higher than in a diesel engine. B
A. True
B. False
38. _____ of the brakes should be used to make an emergency stop. B
A. One
B. Both

39. All tractors should not be started unless the transmission is in neutral or park. A
A. True
B. False
40. A mixture of traditional diesel in a new soybean oil based fuel is called soy or bio-diesel. A
A. True
B. False
41. The throttle on a gasoline tractor is actually a: A
A. governor control.
B. control attached to the carburetor.
C. device for increasing the fuel as it mixes with air.
42. It is important from a safety standpoint to have both brake pedals: B
A. adjusted for different pressures.
B. adjusted so pressure is applied evenly when the pedals are locked together.
43. It _____ normal for a tractor engine to consume some crankcase oil. A
A. is
B. is not
44. Pressure caps are used on cooling systems for: B
A. keeping the radiator from overflowing when the tractor is not running.
B. more efficient cooling.
45. Gasohol is a mixture of gasoline and ethanol alcohol. A
A. True
B. False
46. _____ tractors use a pressurized fuel tank. A
A. LPG
B. Diesel
C. Gasoline
47. The liquid in a battery is a solution of water and: B
A. hydrochloric acid.
B. sulfuric acid.
48. It _____ possible to over lubricate the clutch throw-out bearing on your tractor. A
A. is
B. is not

49. Removing the radiator cap suddenly from a pressurized cooling system _____ dangerous. A
A. is
B. is not
50. A loose or broken sparkplug wire _____ cause a fire. A
A. can
B. cannot
51. On tractors with a battery ignition system the strength of the spark for starting _____ depend on how well the battery is charged. A
A. does
B. does not
52. A good way to prevent a tractor accident is: B
A. take your chances.
B. make sure your actions are safe at all times.
53. In choking a tractor engine for cold-weather starting you: A
A. decrease the air and increase the fuel.
B. increase the air and decrease the fuel.
54. Many_____ tractors use heated air in the cylinders for quick starting in cold weather. A
A. diesel
B. LPG
55. LPG is a fuel that _____ at ordinary temperatures. A
A. vaporizes
B. liquefies
56. Diesel engines _____ require a warm-up period before being loaded. B
A. do not
B. do
57. Shutting off an engine before letting it idle for a few minutes: B
A. makes it hard to start the next time.
B. may cause warped valves due to uneven cooling.
58. When driving a tractor downhill make certain the clutch is always: A
A. engaged.
B. disengaged.

59. It is a good idea always to: B
A. leave the ignition key in the tractor.
B. remove and place the ignition key where it is not available to unqualified personnel.
60. The first step in starting any tractor is: C
A. turn on the ignition.
B. check the gearshift lever.
C. make certain the area is clear of other people.
61. If a tractor fails to start immediately: B
A. give up and do something else.
B. see if you can locate the trouble.
C. keep trying, because all tractors start if you crank them long enough.
62. When operating under dusty conditions, the air cleaner should be serviced: C
A. daily.
B. every 25 hours.
C. per the manufacturer's service manual.
63. If dirt should enter the engine, it: A
A. causes rapid wear of the cylinder walls.
B. is burned up in the cylinder without doing much damage.
C. is washed away by oil.
64. The viscosity or SAE number of oil used in the oil bath air cleaner is: A
A. important.
B. of slight importance.
C. of no importance.
65. The pre-cleaner: B
A. seldom needs attention.
B. needs attention as often as the air cleaner.
C. doesn't need any attention.
66. A diesel engine air cleaner cleans _____ air at light load as compared to full load operation at the same rpm. C
A. less
B. more
C. the same amount of
67. Grease, like oil, comes in many different formulas or grades. A
A. True
B. False

68. Proper oil level in the oil bath air cleaner _____ important to the air cleaner operation. A
A. is
B. is not
69. All exhaust systems need to be protected to keep moisture out when not in use. A
A. True
B. False
70. Will a bent pipe or jammed-down intake cap make any difference in the amount of air that gets into the engine? A
A. yes
B. no
C. not enough to matter
71. It is possible to ruin an engine in _____ by operating it with a faulty air cleaner. A
A. one day
B. a week
C. a month
72. PTO shields _____ be used when the tractor is a different make than the attached equipment. A
A. can
B. cannot
73. When pulling a heavy load up a slope, keep the hitch: A
A. as low as possible.
B. as high as possible.
74. Vapor from fuel is _____ than air. B
A. lighter
B. heavier
75. It is better to _____ of a ditch when the rear wheels start to spin. A
A. back out
B. drive out
76. The pistons in most internal combustion engines are connected directly to the crankshaft. B
A. True
B. False

77. It is the carbon dioxide in exhaust gases that can kill you. B
A. True
B. False
78. Raising the hitch on the tractor _____ the chance for a backward upset. B
A. decreases
B. increases
79. Water is lighter than diesel fuel. B
A. True
B. False
80. It is _____ dangerous to move farm machinery on the highway than to use it on the farm. A
A. more
B. less
81. The electrical socket on modern tractors for extending a warning light to a trailed implement _____ standardized. A
A. is
B. is not
82. Two 6-volt batteries connected in series yields: C
A. 6-volts.
B. 24-volts.
C. 12-volts.
83. The tractor, being a slow moving vehicle, _____ has the right-of-way. B
A. always
B. sometimes
C. never
84. The first step to operating a tractor on the highway is to: A
A. learn the traffic laws which apply to your state.
B. learn to drive a car.
85. A 12-volt battery, when fully charged, should have approximately 13.6 volts. A
A. True
B. False
86. Inflate tires to: B
A. specification on sidewall of tire.
B. specification in owners manual.

87. Lights on tractors should be visible for a distance of: C
A. 200 feet.
B. 1,500 feet.
C. 500 feet.
88. Safe operation of a tractor on a highway begins with: A
A. courtesy.
B. assuming that others will look out for your safety.
89. Records show that most accidents are caused by: D
A. working when tired.
B. trying to hurry.
C. taking chances.
D. all the above
90. Breakerless ignition refers to: B
A. circuit breakers.
B. breaker points.
C. brake rotors.
91. The proper horizontal distance between the end of the PTO shaft and the hitch point on the drawbar for operating the 1,000 rpm PTO shaft is: B
A. 14 inches.
B. 16 inches.
92. The spline for a 540 rpm PTO shaft _____ the same as the spline for a 1,000 rpm shaft. B
A. is
B. is not
93. Three-point hitches _____ standardized by category. B
A. are not
B. are
94. Single-acting hydraulic cylinders: A
A. exert force in one direction only.
B. exert force in both directions.
95. Four 6-volt batteries connected in parallel yield: A
A. 6 volts.
B. 12 volts.
C. 18 volts.
D. 24 volts.

96. When an implement is operated with the PTO shaft in use, the drawbar should be in the _____ position. C
A. close
B. extended
C. recommended
97. Category II mounted equipment _____ be used on a tractor with a Category I rear-mounted hitch. B
A. should
B. should not
98. It _____ always safe to use regular crankcase oil in the hydraulic system. B
A. is
B. is not
99. It has been estimated that _____ percent of accidents are due to carelessness. C
A. 50
B. 30
C. over 80
100. On the basis of the accident rate per man-hour, it is safer to: A
A. work in a factory.
B. work on a farm.
101. A tractor with a wide front end is _____ likely to tip than a tricycle type tractor. B
A. more
B. less
102. Accidents happen to approximately _____ percent of our farm population each year. A
A. 20
B. 10
C. 40
103. Many accidents with farm machinery happen when: B
A. the machine reaches out and grabs the operator.
B. the operator starts tinkering with the machine while it is running.
104. It is estimated that faulty equipment is a factor in _____ percent of the accidents with farm machinery. C
A. 2
B. 24
C. 10

105. When getting ready to operate power-driven equipment, the first step is to: B
- A. start it up and see if it still runs.
 - B. be sure all of the shields and guards are in place.
 - C. check the speed of the PTO.
106. Safe operation of farm machinery is: C
- A. impossible.
 - B. a matter of pure chance.
 - C. a matter of making up your mind to be a safe operator.