Northeast Wisconsin Ag Mechanics

Virtual CDE Contest

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Ag Mechanics

Knowledge Questions

50 Questions

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1: How many grams of hydrocarbons do regulated fuel lines emit?

a. 13
b. 15
c. 20
d. 21

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2: When should the ignition spark occur during high-speed operation.

a. TDC (Top Dead Center)
b. 30-45 degrees before TDC
c. 15-30 degrees before TDC
d. 1 degree after TDC

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3: Which of the following is true about non-regulated charging systems?

a. They deliver a constant electrical output based on a constant engine speed.
b. They use a voltage regulator to deliver a constant amount of electricity over varying engine speeds.
c. Are not affected by an engines RPMs.
d. Are most common when primary equipment has additional components associated with it

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4: Each cylinder in a eight cylinder tractor engine has a bore of 4.75 inches and a piston stroke of 5.9 inches. What is the approximate total displacement of this engine in liters?

a. 17.98 liters
b. 2 liters
c. 21.35 liters
d. 13.7 liters

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5: There are 195 acres of corn with an average yield of 96.5 bushels per acre. Due to moisture content, a bushel has an average weight of 64.2 pounds. If the price is 14.2 cents per pound of harvested corn, what is the approximate income for the crop?

a. $1,790,563
b. $234,548
c. $171,548
d. $2,056,689

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6: The interior electrical lighting of a farm structure is being replaced with high efficiency lighting. The 20 incandescent, 200-Watt lights will be replaced with 20 LED, 50-Watt lights. If the lights are operated 88 hours per month and electricity cost 10 cents per kilowatt-hour (kWh), what is the approximate reduction in electrical power costs each month?

a. $26.40
b. $32.75
c. $40
d. $22.35

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7: A 21-foot length of non threaded black pipe is to be cut into 13 pieces of equal length. Both ends of the 21-foot pipe are already cut square (90 degrees) and the 13 pieces will also have square cut ends. The metal saw being used cuts a kerf (material removed by saw blade) that is 5/32 inch wide. Other than the material lost by the saw kerf, none of the pipe is wasted or unused in cutting the 13 pieces of equal length. What is the approximate length (in feet, inches and fraction of an inch) of each piece of the pipe.

a. 1 Foot and 6 ½ inches
b. 1 Foot and 5 inches
c. 1 Foot and 7 ¼ inches
d. 1 Foot and 2 inches

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8: The center section of a fuel storage tank has a cylindrical shape (capsule) that is 6.5 feet long with an inside diameter of 3.5 feet. Each end of the tank has a half-sphere shape (two halves of a sphere), each with an internal radius of 21 inches. What is the approximate total storage capacity of the tank in gallons?

a. 635 Gallons
b. 653 Gallons
c. 563 Gallons
d. 725 Gallons

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9: A tractor’s PTO produces 290 horsepower at a rated power take-off speed of 1000 revolutions per minute. How much torque in foot-pounds does the tractor produce at the power take-off shaft?

a. 1,124 lb-ft
b. 1,325 lb-ft
c. 1,523 lb-ft
d. 1,426 lb-ft

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10: Which of the following roof types would be considered the strongest because all four sides slope from a central point?

a. Hip
b. Flat
c. Shed
d. Gable

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11: The operation of a walk-behind gasoline mower must generate sufficient income from cutting grass to generate a profit over purchase price, operating costs, and labor expenses. An $890 mower is operated 760 hours annually for three years and then sold at an estimated salvage value of $75. If total labor and operating costs are $28 per hour and an average of 1850 square-feet of grass can be cut in an hour, what approximate amount should be charged for each hour of the mower's operation to produce a 50% profit margin?

a. $98
b. $72
c. $57
d. $56

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12: In agricultural mechanics the term PPE stands for:

a. Personal protocol of equipment
b. Property, plant, and equipment
c. Personal protective equipment
d. Protection of personal equipment

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13: A self-propelled fertilizer spreader for specialty crop production has a 12-foot swath width and an averages travel speed of 4.5 miles per hour. Fertilizer is applied to an area measuring 185 yards long and 145 yards wide, by an inexperienced operator that is only 70% efficient. Approximately how long will it take the inexperienced operator to complete the fertilizer application?

a. 1 hours and 99 minutes
b. 1 hours and 33 minutes
c. 1 hours and 13 minutes
d. 2 hours and 15 minutes

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14: A standard stud is a vertical board used inside walls in agricultural and residential framing to increase support. The standard size of a stud is:

a. 2” x 6” lumber
b. 2” x 2” lumber
c. 2” x 4” lumber
d. 2” x 10” lumber

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15: Approximately how many acres are in a rectangular area of land with adjacent sides that measure 6.5 kilometers and 0.75 miles?

a. 9999.9 acres
b. 2447.6 acres
c. 1938.7 acres
d. 3384.4 acres

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16: During the repair of an engine, a pilot-hole must be drilled to accommodate a 3/8” tap that will cut threads (for a 3/8” bolt) in the wall of the pilot-hole. The tap table indicates that the pilot-hole must have a 0.3125” diameter. All of the available twist drills have fractional rather than decimal measurements. What size twist drill should be used to drill the pilot-hole?

a. 21/64 inch
b. 11/32 inch
c. 5/16 inch
d. 12/32 inch

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17: Which of the following has the greatest weight in pounds: 1.59 gallons of gasoline, 1.45 gallons of diesel, 1.36 gallons of 15W-40 engine oil, or 1.37 gallons of automatic transmission fluid?

a. Gasoline
b. 15W-40 engine oil
c. Diesel
d. Automatic transmission fluid

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18: To determine the wheel slippage in a loaded tractor's operation the following measurements were made. The rear wheels of a tractor each have a diameter of 5.15 feet, the test distance is 100 feet long, and the loaded tractor rear wheels make 6.8 rotations while traveling the 100 feet. What is the approximate wheel slippage for this tractor during each rotation of the rear wheel?

a. 0.28 feet/rotation, 1.73%
b. 0.67 feet/rotation, 4.14%
c. 1.47 feet/rotation, 9.09%
d. 1.08 feet/rotation, 6.68%

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19: This system manages, analyzes and creates maps of all types of data into one user interface.

a. GIS - Geographic Information Systems
b. MSD - Mapping Systems Data
c. GmAp - Google Mapping Analytics
d. TIP - Topographical Information Program

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20: Materials know to allow for great amounts of electrical current to flow through them freely are called:

a. Insulators
b. Resisters
c. Conductors
d. Regulators

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21: Which of the following quantities of lumber has the smallest number of board-feet?

a. 24 boards measuring 1 inch by 8 inches by 14 feet
b. 27 boards measuring 2 inches by 4 inches by 12 feet
c. 22 boards measuring 2 inches by 6 inches by 10
d. 20 boards measuring 1 inch by 8 inch by 16 feet

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22: Approximately how many acres are in a rectangular field measuring 1109 meters by 928 yards?

a. 2.4 acres
b. 204.6 acres
c. 232.5 acres
d. 243.2 acres

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23: The unit of measure for electrical pressure is known as:

a. Volts
b. Ohms
c. Torque
d. Foot Pounds

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24: A tractors power take off produces 275 horsepower and turns at 1000 revolutions per minute how many torque in foot pounds can this PTO produce

a. 1111 fp
b. 1222 fp
c. 1333 fp
d. 1444 fp

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25: If a tractor travels at 28.5 kilometers kilometers per hour what approximate length of time in hours is required to travel 29.5 miles

a. 1 hour and 2.1 minutes
b. 1 hour and 16.8 minutes
c. 1 hour and 39.4 minutes
d. 1 hour and 29.3 minutes

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26: A 250 horsepower engine is operating 7150 feet above sea level what horsepower is produced by the engine if the engines power is reduced 2.5 percent for every 1000 feet above sea level

a. 204 horsepower
b. 200 horsepower
c. 205 horsepower
d. 195.3 horsepower

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27: A round concrete column is fabricated using 5.8 cubic yard of concrete. If the concrete column is 40 inches in diameter what is the height of the column.

a. 17.95 ft
b. 20 ft
c. 18.71 ft
d. 15.76 ft

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28: What is the approximate speed, in miles per hour, for a planter that travels 200 feet in 28.7 seconds?

a. 3.98 miles per hour
b. 5.50 miles per hour
c. 4.75 miles per hour
d. 6.37 miles per hour

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29: A planter has a 18-foot effective swath width, it travels at 5.5 miles per hour, and it operates with a field efficiency of 87 percent. What is the approximate effective field capacity (EFC) of the planter in acres per hour?

a. 7.2 acres per hour
b. 8.6 acres per hour
c. 10.4 acres per hour
d. 9.8 acres per hour

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30: A pesticide label indicates that it is to be applied at the rate of 4.5 ounces per acre. Approximately how many acres will one gallon of this pesticide formulation treat?

a. 29.7 acres per gallon
b. 31.6 acres per gallon
c. 28.4 acres per gallon
d. 32.5 acres per gallon

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31: A cattle electric pump on a waterer is labeled at 3 amps and has a resistance of 40 ohms. What voltage is required to operate the pump?

a. 80 volt
b. 120 volt
c. 220 volt
d. 240 volt

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32: When do diesel engines commonly get used?

a. Short running time
b. Always in cold temps
c. Transportation and long running time
d. Only in heavy equipment

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33: On average, how efficient are gas engines?

a. 30%
b. 40%
c. 50%
d. 60%

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34: Which of the following are classified as strong conductors?

a. Zinc, aluminum, cobalt
b. Silver, copper, alumunium
c. Coxpper, gold, lead
d. Lead, silver, vanadium

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35: In a four stroke engine which stroke is the “last”

a. Intake
b. Compresion
c. Combustion
d. Exhaust

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36: If you need to measure a gap in a rocker arm on an engine which tool would be the most common and best suited for the job?

a. Feeler gauges
b. Micrometer
c. Dial calliper
d. Telescoping gauge

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37: The molten part of the weld where heat is being applied is called the:

a. Puddle
b. Arc
c. Bead
d. Slag

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38: What sustainable fuel comes from the gasses captured from cow manure?

a. Gasoline
b. Diesel
c. Methane
d. Kerosine

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39: This type of arc welding uses flux coated rods:

a. SMAW
b. TIG
c. MIG
d. GMAW

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40: In an oxyacetylene welder there will be one tip. A size OOO tip would be _____ than a size 10 tip.

a. Smaller
b. Larger
c. Hotter
d. Safer

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41. Which type of axe would be best suited for clearing brush, small limbs, and pounding in stakes?

a. Double handled axe
b. Single bit axe
c. Double bit axe
d. Hand axe

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42: Which shovel would be best suited for digging down a trench line?

a. Flat head feed shovel
b. Square point shovel
c. Round point shovel
d. Scoop shovel

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43: The process of making a hole with an electrode is called:

a. Cutting
b. Drilling
c. Piercing
d. Punching

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44: Which welding a lap weld the electrode should be held at:

a. 15 degrees
b. 30 degrees
c. 45 degrees
d. 60 degrees

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45: The _____ is an engine part that converts the up and down or linear motion of the piston in a circular motion.

a. Camshaft
b. Connecting rod
c. Flywheel
d. Crankshaft

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46: The extent of tightening/twisting nuts/bolts on a small engine is called:

a. Cinch
b. Lash
c. Torque
d. Crank

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47: Type UF cable is approved for direct burial in _____ but not in _____.

a. Soil - dirt
b. Soil - concrete
c. Manure - soil
d. clay - soil

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48: During the compression event of a four-stroke engine

_____

a. Both valves are open
b. Both valves are closed
c. Intake valve is open and exhaust valve is closed
d. Intake valve is closed and exhaust valve is open

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49: A _____ is a lumber defect that is caused by an embedded branch or limb that reduces strength of the wood.

a. Split
b. Wane
c. Stain
d. Knot

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50: Which of the following fasteners is NOT a type of nail?

a. Finish
b. Box
c. Screw
d. Brad

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Identification Questions

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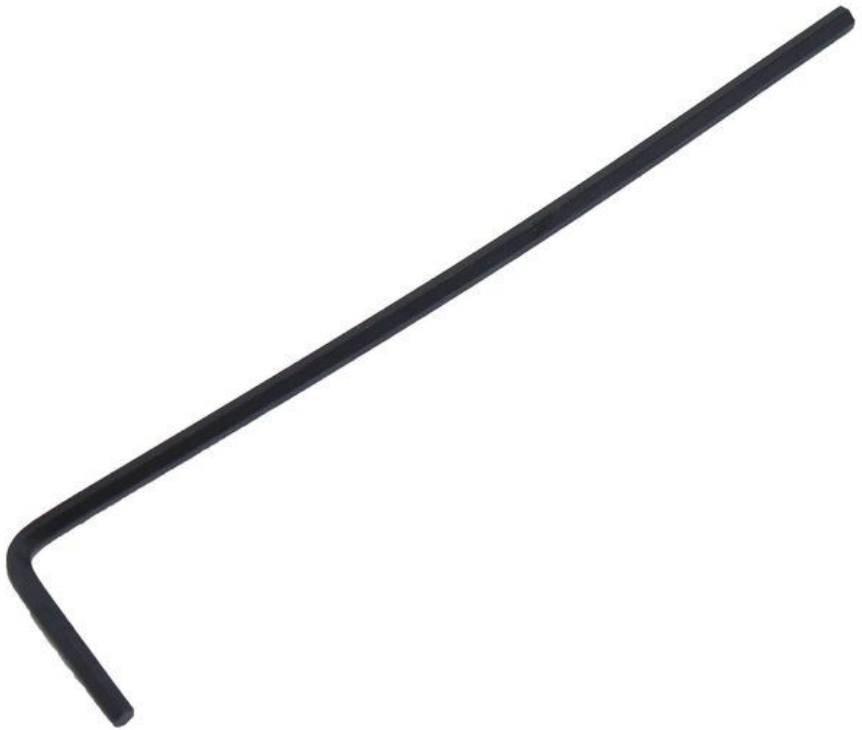

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Thank you for participating!

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