

# 2016 Reno County Ag Challenge of Champions

## Friday, July 22, 2016

Name \_\_\_\_\_ Age \_\_\_\_\_

4-H Club/FFA Chapter \_\_\_\_\_

### **RULES:**

1. A county extension agent or FFA instructor must certify each contestant as a Reno county student.
2. The superintendent and committee of the contest shall be in charge of the contest. They shall have the authority for interpretation of the rules.
3. No contestants will be allowed to have books or notes during the contest.
4. While the contest is in session, there shall be no communication between contestants.

**GOOD LUCK!!!**

# 2016 Ag Challenge of Champions Written Test

Multiple Choice: (Circle the letter of the correct answer)

## Agricultural/Livestock Industry

01. Which nutrients have the highest energy value?

- a. proteins
- b. carbohydrates
- c. fiber
- d. **fats**

02. Which gland in the male produces the sperm cells?

- a. vas deferens
- b. urethra
- c. epididymis
- d. **testicles**

03. The release of the egg from the ovary is called the:

- a. fertilization
- b. **ovulation**
- c. parturition
- d. reproduction

04. Which of the following wholesale cuts of beef are high-value?

- a. chuck
- b. plate
- c. brisket
- d. **rib**

05. Rapid fermentation in the rumen causing too much gas to be produced is referred to as:

- a. enterotoxemia
- b. founder
- c. **bloat**
- d. brisket disease

06. White Muscle disease is caused by a deficiency of the trace element:

- a. copper
- b. **selenium**
- c. calcium
- d. iron

07. A lack of what substance in the blood causes milk fever in sheep?

- a. **calcium**
- b. vitamin K
- c. vitamin D
- d. zinc

08. Which type of muscle found in the body is typically referred to as meat?

- a. **skeletal**
- b. smooth
- c. cardiac
- d. unstriated

09. Which amino acid is essential for swine rations?

- a. Glycine
- b. **Histidine**
- c. Proline
- d. Tyrosine

10. A general principle when developing a livestock ration is:

- a. utilization of available feed
- b. determine the stage of pregnancy of the animal
- c. developing the least cost ration
- d. **meeting the nutritional needs of the animal**

11. Which disease in cattle is commonly known as mad cow disease?

- a. **Bovine Spongiform Encephalopathy**
- b. Bovine Respiratory Syncytial Virus
- c. Campylobacteriosis
- d. Infectious Bovine Rhinotracheitis

12. What is the average normal temperature of healthy swine in degree Fahrenheit?

- a. 98.6
- b. 100.4
- c. **102.6**
- d. 104.1

13. Which breed of goats' main function is the production of meat?

- a. Angora
- b. Nubian
- c. **Boer**
- d. Toggenburg

14. Which occurs with inflammation?

- a. local blood vessels constrict
- b. body temperature decreases
- c. **fluid accumulates in the tissues**
- d. erythrocytes are stimulated to multiply

15. In protein metabolism, ammonia is converted to urea in what organ?

- a. kidney
- b. **liver**
- c. spleen
- d. small intestine

16. After delivering a calf, what is something the producer or veterinarian must remember to do?
- remove the placenta from the cow
  - give a combination of antibiotics
  - re-examine the birth canal**
  - bleach the birthing area
17. A surge in what hormone causes ovulation?
- prostaglandin
  - progesterone
  - luteinizing hormone**
  - corpus luteum
18. Where on a horse would you find Galvayne's groove?
- ear
  - eye
  - tooth**
  - hoof
19. What trait of a hog refers to its ability to raise large litters of pigs?
- terminal quality
  - maternal quality**
  - conversion ratio
  - yield
20. Sheep rations typically consist of 80 to 90 percent:
- corn
  - roughage**
  - concentrate
  - sorghum
21. Swine are in a class of animals that consume both plants and meat known as:
- omnivores**
  - herbivores
  - ruminants
  - carnivores
22. A method of animal identification that is a puncture in the skin of numbers or letters is known as:
- freeze brand
  - hot brand
  - ear tag
  - tattoo**
23. The amount of fat cover on a market lamb is referred to as:
- carcass merit
  - fleshing
  - quality
  - finish**
24. The most common parasite affecting beef cattle are:
- flies**
  - roundworms
  - liver flukes
  - ticks

25. Two factors that have a major influence on profitability in swine production are:

- a. **number of pigs weaned per sow; feed efficiency**
- b. breed; adaptability to environment
- c. number of pigs weaned; adaptability to environment
- d. breed; feed efficiency

### **Farm Equipment**

26. In a small gas engine, the spark from an electronic ignition originates from the:

- a. points
- b. battery
- c. condenser
- d. **flywheel magnets**

27. On a single cylinder 4-stroke engine the camshaft opens the valve and the \_\_\_\_\_ closes the valve.

- a. rod
- b. pushrod
- c. **valve spring**
- d. lifter

28. Attached to the crankshaft to give momentum is the:

- a. **flywheel**
- b. front pulley
- c. connecting rods
- d. fan belt

29. In an electrical outlet, the brass-colored terminals of a receptacle represent the \_\_\_\_\_ terminals.

- a. neutral
- b. white
- c. **hot**
- d. ground

30. The optimal moisture for baling round bales is?

- a. 6-9%
- b. 9-12%
- c. 12-15%
- d. **15-18%**

31. Which of the following is **NOT** an advantage of using net wrap instead of twine?

- a. bales are wrapped quicker
- b. bales will shed more water
- c. net wrapped bales usually hold together better
- d. **the cost per bale**

32. Both intake and exhaust valves are open at the same time on a 4-stroke engine at:

- a. end of power and beginning of exhaust stroke
- b. end of intake and beginning of compression stroke
- c. **end of exhaust and beginning of intake**
- d. end of compression and beginning of power stroke

33. A diesel engine intercooler cools?
- water
  - diesel fuel
  - air entering the turbocharger
  - air leaving the turbocharger**
34. Electrical motors need adequate cooling or all of these problems can occur EXCEPT:
- breakdown of the insulation of the winding conductors
  - overloading of the motor due to partial shorts in the windings
  - a higher amperage draw resulting in greater voltage drop
  - a higher voltage draw resulting in excessive rpm's to motor**
35. If a motor is a dual voltage motor and it draws 10 amps on the 115 volt it will draw \_\_\_\_\_ amps on the 230 volts
- 5**
  - 10
  - 20
  - 40
36. Sprayer tanks made of this material are most popular for corrosive liquid fertilizer application by **commercial** applicators.
- fiberglass
  - metal with epoxy lining
  - stainless steel**
  - aluminum
37. Chemical drift can be affected by:
- formulation of the chemical
  - nozzle size
  - pressure
  - all of these**
38. Nozzle should be selected to give the proper:
- spray pattern
  - particle size
  - application
  - all of these**
39. What can cause a "W" bottom seed trench?
- the double disk openers need adjusting
  - the double disk openers are too small a diameter
  - the double disk openers are not touching
  - all of the above**
40. After the planting season is complete the operator needs to store the vacuum corn meter unit. The following is steps to follow to store the metering unit. Find the one that does **NOT** belong.
- remove the cover to relieve pressure on the seal
  - remove the metering plate and store in a cool dry place
  - completely wash the metering unit with soap and water
  - after washing off the units completely, cover with engine oil to prevent rust**

41. Seed size determines the following. Identify the one that does **NOT** belong.
- a. vacuum setting
  - b. finger pressure adjustment
  - c. **planter speed MPH**
  - d. size of seed plate used
42. The primary function of a planter is **NOT** to:
- a. make the seed trench
  - b. **till the seed bed area**
  - c. cover the seed trench
  - d. firm the seed bed
  - e. meter the seed
43. If a planter tire is underinflated, this will cause the planter to drop:
- a. **more seed**
  - b. less seed
  - c. the inflation of the planter tire does not affect the seeding rate
  - d. none of the above
44. A 12-volt automotive battery has \_\_\_\_\_ cells.
- a. 1
  - b. 2
  - c. **6**
  - d. 12
45. A baler operator notices that the large round bale is lop-sided. The source of the problem is a/an:
- a. faulty monitor
  - b. twine arm is not wrapping the bale properly
  - c. **operator failed to "weave" as he/she was baling**
  - d. none of the above
46. In reference to carburetor adjustment, a lean air-fuel mixture has:
- a. **less fuel and more air**
  - b. less air and more fuel
  - c. no bearing on engine performance
  - d. enhanced engine cooling properties
47. The thickness of oil or resistance to flow is called?
- a. service classification
  - b. octane rating
  - c. cetane rating
  - d. **viscosity**
48. When troubleshooting small engine problems, which of the following areas would you be least likely to check?
- a. ignition system
  - b. fuel system
  - c. compression system
  - d. **cooling system**

49. Excessive fuel in the combustion chamber is called?
- a. **flooding**
  - b. swamping
  - c. floating
  - d. drowning
50. Which of the following is least likely to cause a loss of compression?
- a. **worn spark plug**
  - b. worn piston rings
  - c. stuck piston rings
  - d. worn valves

### **Farm Management**

51. In the market for grapefruit, what determines the market price?
- a. the quantity of grapefruit produced
  - b. the quantity of grapefruit bought
  - c. the price of oranges
  - d. **grapefruit supply and grapefruit demand**
52. A tax-deductible expense?
- a. **reduces taxable income**
  - b. increases taxable income
  - c. has no impact on taxable income
  - d. increases taxes owed
53. The part of a loan that is repaid during a year is what type of payment?
- a. **principal**
  - b. interest
  - c. mortgage
  - d. installment
54. Net worth on a balance sheet = total assets less \_\_\_\_\_?
- a. equity
  - b. debt
  - c. **total liabilities**
  - d. accrued expenses
55. What are two general types of inputs used in a production process?
- a. **fixed and variable**
  - b. liquid and non-liquid
  - c. short-run and long-run
  - d. those supplied and those demanded
56. A current asset is one that:
- a. is currently being used by a business firm
  - b. **can be converted into cash fairly easily within one year**
  - c. has been paid for by the business owner
  - d. has been purchased within the past year by the business owner

57. The ability to convert assets into cash is known as:
- liquidity**
  - solvency
  - profitability
  - elasticity
58. If a diversified farming operation raises and sells hogs, among other commodities, a detailed listing of revenues and expenses for just the part of the farming operation dealing with the hogs would be called?
- a cash flow budget
  - an enterprise budget**
  - a whole farm budget
  - an income statement
59. Prorating the cost of a capital asset over the useful life of that asset is called:
- capital budgeting
  - figuring out depreciation**
  - itemizing expenses
  - spreading fixed costs over larger units of output
60. Which of the following is a tax-deductible expense?
- loan principal repayments
  - interest payments on a credit card used for personal expenses
  - machinery rental fees**
  - all of the above
61. Darren purchased a group of weaner pigs weighing 12 pounds each and sold them weighing 278 pounds after feeding them for 160 days. Each pig ate 750 pounds of feed during the feeding period. Average daily gain for each pig in the group (gain per day) during the feeding period was:
- 2.95 pounds/day
  - 1.92 pounds/day
  - 1.66 pounds/day**
  - .285 pounds/day
  - none of the above
62. A farmer purchases 700-pound feeder steers for \$1.80 per pound and plans to sell the steers at 1300 pounds. The farmer estimates the total cost of gain to be \$0.91 per pound. The nearest breakeven price when the steers are sold at 1300 is:
- \$1.25/pound
  - \$1.32/pound
  - \$1.39/pound**
  - \$1.43/pound
  - none of the above
63. Corn has an expected yield of 160 bushels per acre and has a production cost of \$375 per acre. Current market prices are \$5 per bushel for corn and \$13 per bushel for soybeans. Soybeans can be raised at a production cost of \$250 per acre. At what breakeven yield per acre would soybeans generate the same net return per acre as dry land corn?
- 41.9 bushels
  - 45.2 bushels
  - 51.9 bushels**
  - 63.3 bushels
  - none of the above

64. Cody borrowed \$15,000 on April 1 to cover the cost of planting soybeans. He repaid the loan on November 1<sup>st</sup> along with \$577.50 in interest. The interest rate he paid was:
- 6.3%
  - 6.6%**
  - 6.9%
  - 7.7%
  - none of the above
65. How many pounds of 48% protein supplement must be mixed with 11% protein wheat to make a ton of 16% protein feed?
- 270 pounds**
  - 350 pounds
  - 400 pounds
  - 550 pounds
  - none of the above
66. A cattle feeder, wishing to use futures markets to hedge the price of slaughter cattle, would at the time of his cattle purchase:
- buy futures contracts expecting to sell the contracts when selling cattle
  - sell futures contracts expecting to sell more contracts when selling cattle
  - sell futures contracts expecting to buy contracts when selling cattle**
  - buy futures contracts expecting to buy more contracts when selling cattle
  - none of the above
67. A feedlot operator buys feeder steers, finishes them and sells them. The operator estimates that finished steers will sell for \$130 per cwt. And that it will cost \$450 per head to bring them from the 750-pound purchase weight to the 1250-pound selling weight. What is the highest price the operator can pay for 750-pound feeder steers to break even?
- \$132.17/cwt.
  - \$140.83/cwt.
  - \$149.18/cwt.
  - \$156.67/cwt.**
  - none of the above
68. A producer sells 7 feeder steers for \$180/cwt. The average weight per steer is 752 pounds. There is a 2% sales commission and yardage fees of \$4 per head. The net amount received for the pen of steers would be:
- \$1,026.00
  - \$9,186.75
  - \$9,187.42
  - \$9,257.70**
  - none of the above
69. Assume a market hog weighs 285 pounds when loaded on a truck, weighs 279 pounds when unloaded at the slaughter plant, and yields a carcass that weighs 211 pounds. If the packer pays \$102.50/cwt. of carcass weight for the hog, what is the equivalent live value of the hog when it left the farm?
- \$75.89/cwt.**
  - \$77.52/cwt.
  - \$79.16/cwt.
  - \$80.55/cwt.
  - none of the above

70. By weight, anhydrous ammonia is 82.3% nitrogen. By weight, ammonium nitrate is 35% nitrogen. If anhydrous ammonia cost \$900 per ton, what price per pound of ammonium nitrate would yield the same cost per pound of nitrogen as anhydrous ammonia?

- a. **\$0.191**
- b. \$0.547
- c. \$1.058
- d. \$1.560
- e. none of the above

71. Marginal cost is:

- a. the cost of a marginally profitable activity
- b. **the additional cost per additional unit of output**
- c. a fixed cost
- d. typically declining as output is increasing

72. A farmer's net worth is most readily seen on:

- a. a cash flow statement
- b. **a balance sheet**
- c. an income statement
- d. an enterprise budget

73. An opportunity cost is what you:

- a. pay for an opportunity
- b. spend on fixed inputs
- c. spend to produce one more unit of output
- d. **give up (its value) in order to do something**

74. Which of the following is most likely **NOT** a variable input for a corn producer?

- a. fertilizer
- b. seed corn
- c. **buildings**
- d. labor

75. Based on the law of diminishing returns, an added pound of fertilizer in corn production will eventually reduce:

- a. total corn production
- b. **the additional corn produced per additional unit of fertilizer**
- c. average bushels per acre produced
- d. average costs per bushel

### **General Agriculture**

76. Each U. S. farmer feeds \_\_\_\_\_ people.

- a. 135
- b. 145
- c. **155**
- d. 165

77. Americans spend 10 percent of their disposable income on food each year. What percent is spent on food that is eaten at the home?

- a. 19%
- b. 29%
- c. 39%
- d. **49%**

78. The current U. S. Secretary of Agriculture is:

- a. Mike Johanns
- b. **Tom Vilsack**
- c. Anne Venneman
- d. Ed Schaefer

79. What is the average age of a U. S. farmer?

- a. 37
- b. 47
- c. **57**
- d. 67

80. In which year did President Lincoln sign the Morrill Land Grant College Act?

- a. **1862**
- b. 1872
- c. 1882
- d. 1892

81. What percentage of all U. S. farms and ranches are owned by individuals, family partnerships or family corporations?

- a. 67%
- b. 77%
- c. 87%
- d. **97%**

82. In 2014, Kansas ranked \_\_\_\_\_ in grain sorghum production.

- a. **1<sup>st</sup>**
- b. 2<sup>nd</sup>
- c. 3<sup>rd</sup>
- d. 7<sup>th</sup>

83. In 2014, Kansas ranked \_\_\_\_\_ in wheat production.

- a. 1<sup>st</sup>
- b. **2<sup>nd</sup>**
- c. 3<sup>rd</sup>
- d. 7<sup>th</sup>

84. In 2013, Kansas ranked \_\_\_\_\_ in agricultural exports.

- a. 1<sup>st</sup>
- b. 2<sup>nd</sup>
- c. 3<sup>rd</sup>
- d. 7<sup>th</sup>

85. The standard weight for a bushel of wheat is:

- a. 56 lbs.
- b. 58 lbs.
- c. **60 lbs.**
- d. 62 lbs.

86. The Kansas Secretary of Agriculture is:

- a. **Jackie McClaskey**
- b. Sam Brownback
- c. Pat Roberts
- d. Dale Rodman

87. The top five agricultural products grown or raised in Kansas include:

- a. **cattle and calves, corn, sorghum, soybeans and wheat**
- b. cattle and calves, sheep, sorghum, soybeans and wheat
- c. cattle and calves, corn, sorghum, swine and wheat
- d. cattle and calves, corn, dairy, soybeans and wheat

88. The average size of a Kansas farm is \_\_\_\_\_ acres.

- a. 547
- b. 647
- c. **747**
- d. 847

89. Agriculture is the largest economic driver in Kansas, valued at more than \$62 billion, accounting for \_\_\_\_\_ percent of the state's total economy.

- a. 33
- b. **43**
- c. 53
- d. 63

90. Farmland accounts for \_\_\_\_\_ percent of all Kansas land.

- a. 68.9
- b. 78.9
- c. **88.9**
- d. 98.9

91. The Kansas Department of Agriculture is located in:

- a. Emporia
- b. Hays
- c. Hutchinson
- d. **Manhattan**

92. The two largest trading partners of U. S. exports are:

- a. China and South Korea
- b. **China and Canada**
- c. China and Mexico
- d. Canada and Mexico

93. In 2012, there were \_\_\_\_\_ farms in Kansas.

- a. 60,483
- b. **61,773**
- c. 62,927
- d. 63,246

94. In 2012, Kansas farms generated more than \_\_\_\_\_ in agricultural output.

- a. \$16.5 billion
- b. \$17.5 billion
- c. **\$18.5 billion**
- d. \$19.5 billion

95. The agriculture sector in Kansas employs more than 229,934 people through direct, indirect and induced effect careers, or \_\_\_\_\_ of the entire workforce in the state.

- a. 10
- b. **12**
- c. 14
- d. 16

96. Between Columbia, Missouri and Manhattan, Kansas sits the single largest concentration of \_\_\_\_\_ interests in the world.

- a. **animal health**
- b. crop insurance
- c. farm machinery
- d. all of the above

97. In 2012, Kansas exported nearly \_\_\_\_\_ in agricultural products.

- a. \$1.9 billion
- b. \$2.9 billion
- c. \$3.9 billion
- d. **\$4.9 billion**

98. Kansas is ranked \_\_\_\_\_ in cattle production and beef processing.

- a. first
- b. second
- c. **third**
- d. fourth

99. Kansas is ranked \_\_\_\_\_ in sunflower production.

- a. first
- b. second
- c. third
- d. **fourth**

100. In 2014, Kansas was home to 143,000 dairy cows that produced more than \_\_\_\_\_ pounds of milk.

- a. 1.9 billion
- b. **2.9 billion**
- c. 3.9 billion
- d. 4.9 billion