

2023 Reno County Ag Challenge of Champions

Wednesday, July 19, 2023

Name _____ Age _____

4-H Club/FFA Chapter _____

E-Mail Address _____

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 oversee 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!!!

2023 Ag Challenge of Champions Written Test

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

Agricultural/Livestock Industry

1. The process of taking food nutrients through the intestinal wall is:
 - a. **absorption**
 - b. assimilation
 - c. mastication
 - d. regurgitation
2. Ruminant animals can synthesize _____ of the 22 required amino acids.
 - a. 0
 - b. 10
 - c. 18
 - d. **22**
3. Which breed of cattle descended from Spanish Andalusian cattle brought over by Columbus on his second voyage?
 - a. Hereford
 - b. Santa Gertrudis
 - c. Scotch Highland
 - d. **Texas Longhorn**
4. Which common breed of swine was imported to the United States from Denmark?
 - a. Duroc
 - b. Hereford
 - c. **Landrace**
 - d. Yorkshire
5. The largest compartment of the ruminant stomach for a mature grazing cow is called the:
 - a. abomasum
 - b. omasum
 - c. reticulum
 - d. **rumen**
6. Heifers most commonly reach puberty at the average age of:
 - a. 4 months
 - b. **7 months**
 - c. 12 months
 - d. 18 months
7. When evaluating swine performance data, litter weights are adjusted to a standard of how many days?
 - a. 12 days
 - b. 15 days
 - c. **21 days**
 - d. 28 days

8. The most important factor when formulating a ration for livestock is:
- a. availability of feed
 - b. feed cost
 - c. size of the animal
 - d. **total digestive nutrients**
9. The sudden death of heavily muscled hogs is referred to as:
- a. Mycoplasma Pneumonia
 - b. Porcine Cardiac Complex
 - c. Porcine Circovirus
 - d. **Porcine Stress Syndrome**
10. Which of the following minerals is a trace mineral?
- a. calcium
 - b. potassium
 - c. **selenium**
 - d. sodium
11. The growth and development of animals prior to birth is referred to as:
- a. embryo
 - b. gestation
 - c. placental
 - d. **prenatal**
12. Pigs must be ear notched for _____, which is necessary for good recordkeeping.
- a. grouping
 - b. **identification**
 - c. sexing
 - d. vaccination
13. What is the most important nutrient in a swine ration?
- a. corn
 - b. roughage
 - c. soybean meal
 - d. **water**
14. The length of gestation for swine is an average of how many days?
- a. **114 days**
 - b. 148 days
 - c. 151 days
 - d. 283 days
15. The amount of fat cover on a market steer is referred to as:
- a. carcass merit
 - b. **finish**
 - c. fleshing
 - d. marbling

16. The degree to which the crossbred offspring outperforms its purebred parents is:

- a. high performance
- b. hybrid vigor**
- c. phenotype
- d. ratio condition

17. What is an infertile female calf born as a twin to a fertile male calf called?

- a. clone
- b. freemartin**
- c. markhors
- d. sex-limited

18. In comparing breed performance for litter size in swine, which breed has the highest litter size ratio?

- a. Chester White
- b. Duroc
- c. Hampshire
- d. Landrace**

19. The natural waviness of wool fiber is called:

- a. braid
- b. crimp**
- c. kemp
- d. staple length

20. EPD stands for:

- a. expected product differential
- b. expected progeny difference**
- c. express package delivery
- d. extra production difference

21. _____ is the practice of feeding a ration for 10 days to two weeks before breeding.

- a. Culling
- b. Flushing**
- c. Rationing
- d. Waiting

22. An animal that has extremely straight hind legs is best described as being:

- a. cow-hocked
- b. post-legged**
- c. sickle-hocked
- d. sound

23. The removal of all or part of the tail from sheep is referred to as:

- a. castration
- b. dehorning
- c. docking**
- d. notching

24. Lamb prices vary throughout the year and usually reach a high during which time of year?

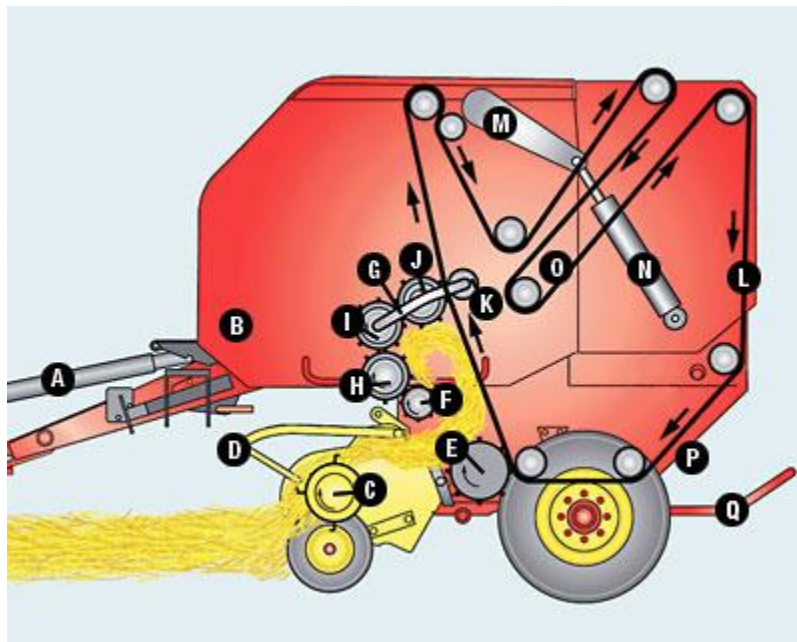
- a. December to February
- b. June to August
- c. March to May**
- d. September to November

25. Which livestock species has the highest consumption rate in the United States?

- a. beef**
- b. goat
- c. lamb
- d. pork

Farm Equipment

Using the diagram provided below, please answer questions 26-29.



26. Which one of the following items is “A” pointing to in the diagram above?

- a. driveshaft**
- b. gear box
- c. jack stand
- d. tongue

27. Which one of the following items is “C” pointing to in the diagram above?

- a. driveshaft
- b. pickup**
- c. tongue
- d. wind guard

28. Which one of the following items is “M” pointing to in the diagram above?

- a. belt
- b. belt tension arm**
- c. belt tension cylinder
- d. belt tension spring

29. Which one of the following items is “N” pointing to in the diagram above?

- a. belt
- b. belt tension arm
- c. belt tension cylinder**
- d. belt tension spring

30. Broadcast spraying of non-specific pesticides should be:

- a. the first choice in controlling weeds
- b. used as a last resort to control weeds**
- c. used on organically grown crops
- d. used to control giant foxtail

31. _____ pesticides can be used to control pests in organic crops.

- a. All chemical
- b. Naturally sourced**
- c. No
- d. Only Bayer

32. _____ are used to mark the edge of the last pass with the crop sprayer.

- a. Foam markers
- b. GPS guidance
- c. Mechanical markers
- d. A or B**

33. The nozzle flow rate in GPM in the following example, is _____ gallons per minute. (30 inch rows, 2 nozzles per row)

$$\text{Formula: GPM} = \frac{\text{GPA} \times \text{S} \times \text{W}}{5940}$$

GPM – gallons per minute

GPA – gallons per acre (20)

S – field speed in miles per hour (6)

W – width of nozzle, in inches (15)

5940 – constant

- a. 0.3030**
- b. 3.030
- c. 20
- d. 30.30

34. _____ when you are operating a sprayer for the local coop.

- a. **be safety conscious at all times, both on-road and off-road**
- b. dispose of excess spray in the ditch, before returning to town
- c. eat in the cab of the sprayer to save time
- d. spray upwind of vulnerable plants, trees, and gardens

35. A self-propelled sprayer, owned by the local coop, can be operated by:

- a. **an employee with a commercial pesticide applicator's license**
- b. any employee of the coop
- c. any farmer-member of the coop
- d. only the chemical manager of the coop

36. Self-propelled sprayers, should be operated with the spray boom:

- a. 6 inches below the top of the crop
- b. 30 inches above the crop, minimum
- c. as high as possible
- d. **at the recommended clearance above the crop**

37. A combine's harvest loss monitor will give accurate readings:

- a. **after physically checking harvest losses and calibrating the monitor**
- b. only when hooked up to a laptop computer
- c. only when used with global positioning systems (GPS)
- d. with no calibration need when purchased new

38. If you find cracked or crushed corn in the combine grain tank, you should _____ first.

- a. adjust the chaffer and sieve to a wider setting
- b. decrease the rotor or cylinder clearance
- c. increase the fan speed
- d. **slow down the rotor or cylinder speed**

39. Do which of the following when leaving the combine operator's station.

- a. leave the engine and separator running
- b. make sure that you have oil pressure
- c. turn off the header and separator – leaving the header at operating height, stop the engine and remove the key
- d. **turn off the header and separator – lower the header to the ground, stop the engine and remove the key**

40. If you find excessive trash in the grain bin, you should _____ first.

- a. decrease the ground speed
- b. **decrease the rotor speed**
- c. increase the rotor speed
- d. open the chaffer

41. A combine should be equipped with _____ for highway operation.
- a. SMV emblem
 - b. turn signals
 - c. yellow lights
 - d. **all of the above**
42. If you find complete bean pods when combining beans or complete corn ears on the ground when combining corn, you should:
- a. assume that the loss is always caused by the grain platform or corn head
 - b. assume that the loss is entirely pre-harvest loss
 - c. **first make a pre-harvest check ahead of the combine to find out if the pods or ears were already on the ground**
 - d. increase the ground speed by 25%
43. Electric motors on grain augers:
- a. are always 120 V AC
 - b. must be 240 V, three phase motors
 - c. **need to be checked on a regular basis for internal buildup of dirt and chaff**
 - d. should be reversible
44. If a worker gets caught in a grain spiral, it can be potentially fatal. A grain spiral occurs:
- a. only after grain has been stored over winter
 - b. only in grain bins more than 18 feet tall
 - c. **when a grain bin is unloaded from the bottom**
 - d. none of the above
45. Potential grain dust explosions are a constant hazard when working with stored grain. Good safety practices would include all of the following except:
- a. do not use trouble lights unless they are approved for use in hazardous locations
 - b. make sure that electric motors are vapor-proof to avoid sparks which might ignite grain dust
 - c. **take a smoke break while the grain is being unloaded**
 - d. use explosion-proof lights
46. If a grain bin has a crust on top of the grain and it will not dislodge, all of the following except _____ are correct actions.
- a. do not allow anyone to go into the bin and kick it down
 - b. do not try to go into the bin and break up the crust with a scoop shovel
 - c. **go into the bin yourself and kick it down**
 - d. use a long pole while standing on a ladder outside the bin and try to dislodge the crust
47. When moving elevators or augers around grain storage buildings, which of the following is(are) good safety practices?
- a. look up
 - b. move the auger carefully because of a tipping hazard
 - c. move the auger fast and don't worry about hazards
 - d. **both a and b**

48. A long rope with knots tied every foot and hangs in the center of a grain bin:
- a. is a hazard because it might get in your way when you are unloading a bin
 - b. is for the kids to swing on when the grain bin is empty
 - c. is silly because no one is ever going to need it
 - d. **may save a life by giving someone a handhold if they get caught in a grain spiral**
49. PTO shafts for portable augers:
- a. are not a critical hazard
 - b. are very dangerous and should be properly shielded
 - c. can cause serious injury to human and animals if they become entangled
 - d. **both b and c**
50. All of the following are true statements about grain dust, except:
- a. dust will irritate your eyes
 - b. grain dust is harmful to your lungs
 - c. **grain dust is harmless**
 - d. grain dust is explosive

Farm Management

51. In the market for corn, what determines the market price?
- a. the price of corn
 - b. the quantity of corn produced
 - c. the quantity of corn purchased
 - d. **the supply of corn and the demand for corn**
52. Based on the economic concept of "time value of money", \$1 today:
- a. may be worth more or less than \$1 five years from now and it will depend on the interest rate
 - b. is worth less than \$1 five years from now
 - c. **is worth more than \$1 five years from now**
 - d. is worth the same as \$1 five years from now
53. The part of a loan that is repaid during a year is what type of payment?
- a. installment
 - b. interest
 - c. mortgage
 - d. **principal**
54. The ability to convert assets into cash is known as:
- a. elasticity
 - b. **liquidity**
 - c. profitability
 - d. solvency

55. Which of the following is often considered to be an advantage of the sole proprietorship form of business?

- a. business life continuity
- b. limited liability
- c. simplicity**
- d. tax savings

56. If a farm is breaking even, they are operating where:

- a. assets = liabilities
- b. cash receipts = cash expenses
- c. marginal revenue = marginal cost
- d. total revenue – total costs**

57. Which of the following is a tax-deductible expense?

- a. interest payments on a credit card used for personal expenses
- b. loan principal repayments
- c. machinery rental fees**
- d. all of the above

58. A negative cash flow means:

- a. cash income < cash expenses**
- b. net worth declined
- c. profit < 0
- d. all of the above

59. A farmer's share of a coop's profits based on level of business done with the coop is called:

- a. a commission
- b. a patronage refund**
- c. a stock dividend
- d. retained earnings

60. If a farmer hedges using futures contracts, they can expect to pay to the brokerage firm:

- a. a basis
- b. a commission fee
- c. a margin deposit
- d. both b and c**

61. In marketing, "basis" is the difference between:

- a. a futures price and a cash price**
- b. a projected price and an actual price
- c. two current cash prices
- d. two current futures prices

62. Spreading and reducing risk by a farmer would be associated with which of the following:

- a. adding a new enterprise to the operation**
- b. expanding the size of their specialty operation
- c. hiring more labor
- d. purchasing more inputs

63. If a corn farmer has hedged some future corn sales with the futures market, what should they do if they are a true hedger when they sell their corn in the cash market in the future?
- a. **buy back the futures contract sold**
 - b. let the corn futures contract expire
 - c. purchase an offsetting call option
 - d. sell the futures contracts initially bought
64. If a corn farmer has a total fixed costs per acre of \$200, variable costs of \$3 per bushel, and the price of corn is \$4 per bushel, what is the farmer's breakeven yield per acre?
- a. 28.57 bushels
 - b. 50 bushels
 - c. 66.67 bushels
 - d. **200 bushels**
65. What market position does a hog farmer have who will be selling market hogs in two months?
- a. intermediate
 - b. **long cash**
 - c. short cash
 - d. vulnerable
66. Misty has agreed to sell 5,000 bushels of soybeans to her local grain elevator on November 1st of this year at a price of \$13.18 per bushel. What type of contractual arrangement is this for Misty?
- a. basis
 - b. **forward cash**
 - c. futures
 - d. hedge to arrive
67. Crop insurance substitutes what for what?
- a. **a certain cost for an uncertain loss**
 - b. an asset for a liability
 - c. an uncertain cost for a certain loss
 - d. physical crop loss risk for a price risk
68. The profit-maximizing output rule is to produce a level of output where the marginal revenue of the last unit produced is equal to what?
- a. average cost
 - b. **marginal cost**
 - c. total cost
 - d. zero
69. Which of the following is true for the "average fixed cost" for a farmer who produces fed cattle?
- a. it decreases with decreases in the number of fed cattle produced
 - b. **it decreases with increases in the number of fed cattle produced**
 - c. it does NOT change with changes in the number of fed cattle produced
 - d. it increases with the increases in the number of fed cattle produced

70. A person who helps you buy and sell things like stocks, bonds, futures contracts, and options is called:

- a. **a broker**
- b. a speculator
- c. a trader
- d. an investor

71. A strike price is:

- a. the desired wage by workers who are on strike
- b. the market equilibrium price
- c. the premium paid for the purchase of an option
- d. **the price at which an option buyer can sell the underlying futures contract**

72. A commodity market described as “highly volatile” is one with:

- a. high inventory turnover
- b. high profitability
- c. **highly variable prices**
- d. unstable interest rates

73. A tax-deductible expense:

- a. has no impact on taxable income
- b. increases taxable income
- c. increases taxes owed
- d. **reduces taxable income**

74. Net worth on a balance sheet = total assets less:

- a. accrued expenses
- b. debt
- c. equity
- d. **total liabilities**

75. What are the 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

General Agriculture

76. What percent of the state’s land is under agricultural production?

- a. 68%
- b. 78%
- c. **88%**
- d. 98%

77. The number of farms in Kansas equals approximately:

- a. 50,000
- b. 65,000**
- c. 80,000
- d. 95,000

78. Today, each farmer produces food and fiber for _____ people annually in the United States and abroad.

- a. 150
- b. 154
- c. 168**
- d. 172

79. _____ of farms are family owned.

- a. 93%
- b. 95%
- c. 97%**
- d. 98%

80. What country receives the most U.S. agricultural products exports?

- a. Brazil
- b. China**
- c. Mexico
- d. Russia

81. The top five agricultural products grown or raised in Kansas does NOT include:

- a. cattle and calves
- b. corn
- c. soybeans
- d. sunflowers**

82. Agriculture programs equal what percentage of the USDA budget?

- a. 18%
- b. 20%
- c. 22%**
- d. 30%

83. Which U.S. president established the USDA?

- a. Abraham Lincoln**
- b. George Washington
- c. Theodore Roosevelt
- d. Thomas Jefferson

84. _____ is the current U.S. Secretary of Agriculture.

- a. Mike Beam
- b. Jackie McClaskey
- c. Sonny Perdue
- d. Tom Vilsack**

85. _____ is the current Kansas Secretary of Agriculture

- a. **Mike Beam**
- b. Jackie McClaskey
- c. Sonny Perdue
- d. Tom Vilsack

86. Farm and ranch families make up less than _____ of the U.S. population.

- a. 0.5%
- b. 0.75%
- c. 1%
- d. **2%**

87. U.S. consumers spend just _____ of their disposable income on food each year.

- a. 8%
- b. 9%
- c. **10%**
- d. 15%

88. The top U.S. export is:

- a. **soybeans**
- b. beef
- c. dairy products
- d. corn

89. What three countries make up nearly 45% of all U.S. agricultural exports?

- a. Brazil, China, and Mexico
- b. Canada, Japan, and Ukraine
- c. **Canada, China, and Mexico**
- d. China, Japan, and Russia

90. The average age of principal farm operators in Kansas has been steadily increasing over the past three decades and is now _____ years old.

- a. 55
- b. **58**
- c. 60
- d. 65

91. Farmers and ranchers receive only _____ cents of every retail dollar spent on food that is eaten at home and away from home.

- a. 11
- b. **19**
- c. 25
- d. 31

92. Who developed the dwarf wheat variety in the 1960's and received a Congressional Gold Medal for his work?
- a. J. Scott Angle
 - b. Robert Bakewell
 - c. **Norman Borlaug**
 - d. John E. Franz
93. U.S. consumers spend just _____ percent of their disposable income on food each year, while those in other countries spend much more.
- a. 6%
 - b. **10%**
 - c. 16%
 - d. 20%
94. The Kansas Department of Agriculture is in:
- a. Hays
 - b. Hutchinson
 - c. **Manhattan**
 - d. Salina
95. Kansas leads the nation in winter wheat production, growing more than _____ of the nation's crop.
- a. 13%
 - b. **23%**
 - c. 33%
 - d. 43%
96. Which species was the first mammal to be cloned and what was this mammal's name?
- a. Cattle / Daisy
 - b. Horse / Trigger
 - c. **Sheep / Dolly**
 - d. Swine / Wilbur
97. Which U.S. holiday/event generates the most revenue spent on food?
- a. Christmas
 - b. Easter
 - c. **Superbowl Sunday**
 - d. Thanksgiving
98. Kansas ranks where among other states in sorghum for grain produced?
- a. **1st**
 - b. 2nd
 - c. 3rd
 - d. 5th

99. In 2020, which Kansas county produced the most bushels of wheat?

- a. Kingman
- b. McPherson
- c. Reno
- d. **Sumner**

100. In 2017, what was the average size of farms in Kansas?

- a. 581 acres
- b. 681 acres
- c. **781 acres**
- d. 881 acres